PowerQuest

Proven Solutions for Storage Management

PartitionMagic®

User Guide

PartitionMagic 7.0
User Guide

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Introduction

What Is PartitionMagic?

With PartitionMagic®, you can quickly and easily create partitions on your hard disks for storing valuable information such as data files, applications, and operating systems. Storing information in separate partitions helps you organize and protect your data and reclaim wasted disk space.

PartitionMagic enables you to secure your data by physically separating it from other files. Separate partitions also make backups easy.

PartitionMagic helps you reliably run multiple operating systems on the same computer. PartitionMagic also includes BootMagic, a powerful boot manager that helps you safely install new operating systems and lets you choose which operating system you want to use when starting your computer.

Because of limitations with the FAT file system, as much as 40 percent of your hard disk space can be wasted. PartitionMagic reclaims wasted space quickly and safely by using more efficient partition sizes. It can also convert FAT partitions to FAT32 and vice versa.

In addition to powerful partitioning features, PartitionMagic offers a variety of other options. For instance, you can perform partitioning operations and view the changes that will be made before applying them to your system. Additionally, you can view comprehensive information about your hard disk geometry and your hardware system, and you can resize root directories (FAT, FAT32) to make room for more long filenames.

New Features

PowerQuest PartitionMagic 7.0 includes the following new features:

- Ability to merge NTFS partitions
- Performance enhancements
- Support for hard disks up to 80 GB
- Ability to undelete partitions using the rescue disk
- Integration with Windows Defragmenter
- Ability to split partitions below the root folder
- Support for USB hard disks as long as they are not system hard disks and they are accessed from PartitionMagic for Windows.

Electronic User Guide Available

This user guide can help you set up and use PowerQuest PartitionMagic.

The PartitionMagic CD includes a searchable PDF version of this manual in the English/Docs folder. The filename is PM7.PDF. PowerQuest recommends that you use Adobe® Acrobat® version 4.0 or later for best viewing quality.You can download the current version of Acrobat for free from the Adobe web site, *www.adobe.com*. In the PDF version of this manual, you can click cross-references (including page numbers in the table of contents and index) to jump to the relevant material. You can also click references to web sites to start your browser and go to the web site. The hand pointer in Acrobat changes to a pointing finger when it is located over text that is linked to other material.

CHAPTER 1

Getting Started

This chapter includes the following information:

- PartitionMagic System Requirements
- Installing PartitionMagic under Windows
- Creating Rescue Disks
- Before Running PartitionMagic
- Running PartitionMagic
- Setting a Password for PartitionMagic
- Features Included with PartitionMagic Pro Only
- Uninstalling PartitionMagic

PartitionMagic System Requirements

PartitionMagic for Windows requires a minimum of 54 MB of hard disk space, a CD-ROM drive (any speed), a 3.5-inch floppy drive, and processor and memory requirements as shown below.

Operating System	Minimum RAM	Minimum Processor
Windows 95/98	32 MB	486 or compatible
Windows Me	32 MB	Pentium/150 MHz or compatible

Operating System	Minimum RAM	Minimum Processor
Windows NT 4.0 Workstation with SP4 applied	32 MB	486/33 or compatible
Windows 2000 Professional	64 MB	Pentium/133 MHz or compatible
Windows XP	64 MB	Pentium/233 MHz or compatible

PartitionMagic Pro supports RAID level 0 (disk striping) and RAID level 5 (striping with parity).

The rescue disk version of PartitionMagic requires a 486DX/33 MHz processor (or faster), 8 MB of RAM (16 MB for NTFS partitions; 32 MB recommended for FAT32 partitions; some very large partitions may require up to 64 MB), a 3.5-inch floppy drive.

Installing PartitionMagic under Windows

IMPORTANT! PartitionMagic must be installed on a local drive, not on a network drive.

1. Insert the PartitionMagic CD into your CD-ROM drive.
2. If the installation program does not start automatically, click **Start ➤ Run** on the Windows taskbar.
3. Type *drive*:\AUTORUN, where *drive* is the drive letter of your CD-ROM drive.
4. Click **Install**, and follow the on-screen installation instructions.

You will have an option to install BootMagic® in addition to PartitionMagic. If you have multiple operating systems installed, you can use BootMagic to choose from installed operating systems each time you boot.

The license agreement for PartitionMagic will be copied to your hard disk during installation. The default path and filename are C:\Program Files\PowerQuest\PartitionMagic [Pro] 7.0\License.txt.

Creating Rescue Disks

You can create rescue disks from the PartitionMagic CD to run PartitionMagic from DOS, Windows 3.x, or Linux machines. You can also create rescue disks under Windows.

Rescue disks are useful when:

- You want to run PartitionMagic, but you do not have an operating system that is supported by the Windows version of the software.
- You have hidden the partition where PartitionMagic is installed and need to run PartitionMagic to unhide the partition.
- You have accidently converted a partition to FAT32 and your operating system does not support FAT32, so your computer will not boot. (You can use the rescue disks to convert the partition back to FAT.)
- Other occasions arise when you do not have access to PartitionMagic on the CD or hard drive.

You must have two blank 1.44 MB floppy disks available before you begin this procedure (three disks for double-byte languages).

1 You can create rescue disks three ways:

To create rescue disks from:	Do this:
PartitionMagic CD (useful if you do not have Windows)	**1a** Open the DOS-OS2 folder on the PartitionMagic CD. **1b** Type `MAKEDISK A:`, where A: is the drive letter for your floppy disk drive. You can also install the DOS version of PartitionMagic to your hard disk using this process. If you install to your hard disk, the PartitionMagic files (but not the system files) will be installed to a PQMAGIC directory at the root of the disk, and you will not need floppy disks.
PartitionMagic main window	Click **Tools ➤ Create Rescue Disks** on the menu bar.
Windows	Click **Start ➤ Programs ➤ PowerQuest PartitionMagic 7.0 ➤ Create Rescue Disks**.

2 Insert a blank formatted 1.44 MB disk into your 3.5-inch disk drive and click **OK**.

3 Follow the prompts and the instructions on the progress bar (located at the bottom of the window).

The rescue disks contain the following files:

PartitionMagic 7.0 Disk 1	PartitionMagic 7.0 Disk 2
• Autoexe2.bat • Autoexec.bat • Command.com • Ega.cpi • Keyb.com • Mode.com • Partinfo.exe (utility program) • PTEDIT (utility program) • Miscellaneous system (.SYS) files • MSCDEX.exe (Windows 9x/Me only) • NWCDEX.exe (Windows NT/2000/XP only) • Fdisk.com (Windows NT/2000/XP only)	• Autoexec.bat • Command.com • Mouse.com • PMHelp.dat (help file) • PQMagic.exe • PQMagic.ovl • PQMagic.pqg • PQPB.rtc • Rescue.txt • zAbout.pqg • Boot.ini (Windows NT/2000/XP only)

If you create rescue disks for a double-byte language, the third disk includes fonts.

Before Running PartitionMagic

You should back up your hard disk before using PartitionMagic. While PartitionMagic has been thoroughly tested and is safe and reliable, other factors, (such as power failures, operating system bugs, and hardware defects), can put your data at risk. Before using *any* utility that makes extensive changes to your hard disk, you should back up your data.

PartitionMagic cannot run while other low-level disk utilities (such as virus detection software or backup software like GoBack®) are running. Close all such utilities prior to starting PartitionMagic.

It is wise to run a file check before running PartitionMagic. Doing so can help you avoid problems.

Verify that the version of PartitionMagic you are running is supported on the operating system (and Service Pack, if applicable) you are running. See “PartitionMagic System Requirements” on page 3.

Running PartitionMagic

IMPORTANT! PartitionMagic must be run from a local, uncompressed drive. You cannot run PartitionMagic from a network drive.

You can run PartitionMagic from Windows 95, Windows 98, Windows Me, Windows NT 4.0 Workstation, or Windows 2000 Professional. Under any other operating system, you must run PartitionMagic from the rescue disks.

To run from:	Do this:
Windows Start menu	Click **Start ➤ Programs ➤ PowerQuest PartitionMagic ➤ PartitionMagic 7.0.**
Windows Explorer	From Windows, click **Start ➤ Programs ➤ Windows Explorer**. Then right-click any drive object, and click **PartitionMagic 7.0**.
My Computer	Right-click the **My Computer** icon, then click **PartitionMagic 7.0**.

Running PartitionMagic from Rescue Disks

When you boot your computer from the first rescue disk, PQMAGIC automatically runs. You must insert the second rescue disk when prompted.

Create Rescue Disks is a wizard that helps you create diskettes you can use to boot your computer and run PartitionMagic for DOS (PQMAGIC).

Preparation

Before you run PartitionMagic from the rescue disks, you should:

- Turn off third-party disk caches.
- Deactivate/unload any TSR programs that access or modify partitions being changed.

You cannot run PartitionMagic on a Windows 2000 Professional, Windows XP Professional, or Windows Me machine that is in hibernation. To use the rescue diskette or PartitionMagic for Windows, Windows 2000, Windows XP, or Windows Me must have been shut down normally.

Rescue Disk Limitations

The following features are not available when you run PartitionMagic from the rescue disks.

- Remote Agent (across the wire) (Pro version only)
- Split partitions
- Secure erase of partitions
- Undo last change
- Wizards

If you run out of space on the first rescue disk as a result of adding network, SCSI, or CD-ROM drivers to your boot sequence, you can delete the following files from the disk: chkdsk.com, fdisk.exe, ptedit.exe, and partinfo.exe. We recommend that you delete the files in that order, freeing up only the space that you need to accommodate additional files. These files are included in the Utilities folder on the PartitionMagic CD where you can access them later, if necessary.

If you use an international keyboard or character set, you will need to modify the AUTOEXE2.BAT and CONFIG.SYS files on the rescue disks. Refer to "Using International Keyboards" on page 24 for additional information.

Checking an NTFS partition with the rescue disk version of PartitionMagic may take an unusually long time. Since PartitionMagic performs checks both before and after the move, copy, and resize operations, these operations may be slower with the rescue disk version of PartitionMagic than with the Windows version.

Command Line Switches

The following command line options are supported by the Windows version and the DOS (rescue disk) version of PartitionMagic, unless noted otherwise. When you specify multiple options, the order is unimportant.

For a list of additional command line switches that are included with PartitionMagic Pro, see "Command Line Switches" on page 93

Switch	Description
/?	Lists all the command line options switches for the version of PartitionMagic you are running.
/CAS	Copies all sectors within partitions.
/CBS	Checks for all bad sectors.

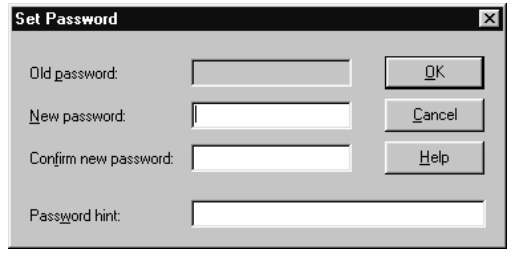
Switch	Description
/CEC	Checks for extra cylinders.
/DBG	Enables debug messages.
/IFC	Ignores file system checks.
/I24	Ignores the 1024 cylinder boundary.
/MUP	Allows you to move partitions of unknown types.
/NBS	Disables bad sector checking. In PartitionMagic Pro, the Set Default Bad Sector Test State command performs a similar function.
/NRB	Instructs PartitionMagic not to reboot after the program exits.
/NSS	Does not display the splash screen.
/PQB	Forces the batch file to the specified location. PartitionMagic creates a batch file when it must perform some operations in boot mode. Syntax: `PQMAGIC /PQB=C:\`, where C: is the location where you want the batch file to be saved.
/RAV	Tells PartitionMagic to read and verify all disk writes. Enabling this option increases the length of time needed to perform some operations, but it ensures that the operation outcome is accurate.
/UVM	Tells PartitionMagic to use virtual memory.
/WFS	Wipes the first sector after deleting all partitions.

Setting a Password for PartitionMagic

You can assign a password that must be entered before PartitionMagic for Windows will start.

1 Click **General ➤ Set Password**.

The **Set Password** dialog box appears.



2 Type a new password, then press <Tab>.

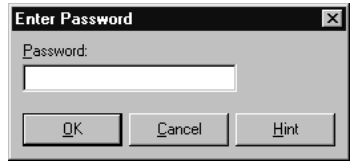
3 Confirm the new password, then press <Tab>.

4 *(Optional)* Add a hint.

5 Click **OK**.

Entering a Password

When you start PartitionMagic and there is a password assigned, the **Enter Password** dialog appears.



1 Type the password assigned to PartitionMagic.

You can click **Hint** to display a reminder.

2 Click **OK**.

Changing a Password

1 Click **General ➤ Set Password**.

2 Type the old password, then press <Tab>.

3 Type the new password, then press <Tab>.

To remove password protection, leave the new password fields blank.

4. Confirm the new password, then press <Tab>.
5. *(Optional)* Change the hint.
6. Click **OK**.

Features Included with PartitionMagic Pro Only

PartitionMagic Pro includes the following features in addition to the features included with the retail version of PartitionMagic. If you have the retail version of PartitionMagic, you should disregard documentation for the PartitionMagic Pro-only features.

- Scripting
- Across the wire (including Remote Agent and Boot Disk Builder)

Uninstalling PartitionMagic

1. On the Windows taskbar, click **Start ➤ Settings ➤ Control Panel**.
2. Double-click **Add/Remove Programs**, then select **PartitionMagic 7.0**.
3. Click **Add/Remove**.

CHAPTER 2

PartitionMagic Basics

This chapter includes the following information:

- PartitionMagic Main Window
- Rescue Disk Main Window
- Process Overview
- Selecting a Hard Disk
- Selecting a Partition
- Selecting an Operation
- Undoing an Operation
- Viewing Pending Operations
- Applying Changes to Your System
- Supported File Systems
- Changing PartitionMagic Preferences
- Using International Keyboards
- Defragmenting a Hard Drive
- Getting Help

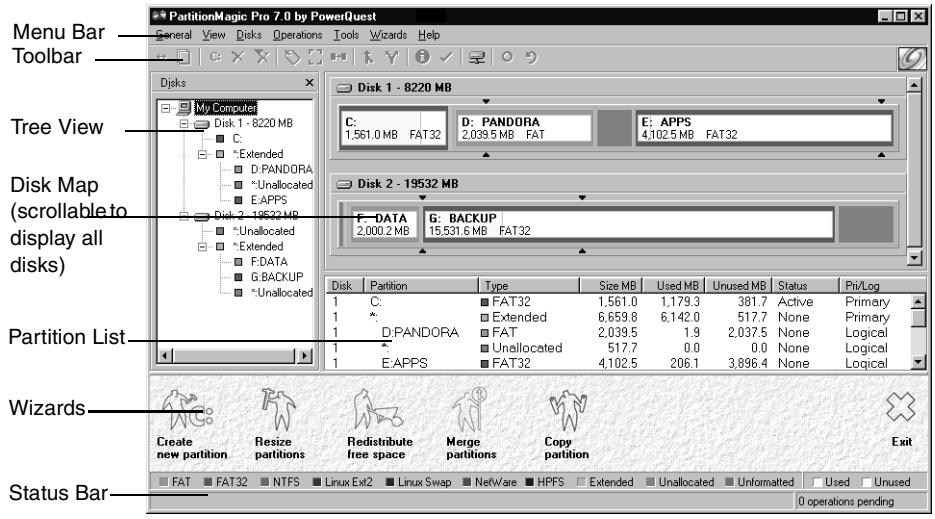
PartitionMagic Main Window

The main window includes an Explorer-like tree view of the disks on your computer, a map of each disk, and a list of the partitions on the selected disk.

The menu bar and a toolbar appear at the top of the window. The menu bar gives you access to all of PartitionMagic's features. When you choose a menu command, the status bar at the bottom of the screen shows what the command does. The toolbar gives you quick access to commonly used options. When the pointer is over a toolbar, the status bar shows what the button does.

You can toggle the view of the toolbar, tree view, wizard buttons, legend, and scaled disk map by clicking commands on the **View** menu.

Note that the main screen is different if you run PartitionMagic from the rescue disks. "Rescue Disk Main Window" on page 16.



Partition Information

The partition area displays information about the selected hard disk's partitions. It consists of two areas: the disk map, which displays information graphically; and the partition list, which displays partition information in text form.

Disk Map

The disk map shows the partitions approximately to scale and also shows unallocated space (space not assigned to any partition). (You can also display disks to scale by clicking **View ➤ Scale Disk Map**.) Each partition is represented by a different color according to the file system it uses. If the selected hard disk contains logical partitions, the logical partitions are shown within an extended partition.

Each partition is color-coded to show the file system it uses and the used and unused space within the partition. Note that the operations you can perform on white (unformatted) or yellow (unknown) partitions are limited. A Legend is displayed just above the status bar located at the bottom of the PartitionMagic window. You can use the Legend to help you understand the different colors used in the tree view, disk map, and partition list. You can also display or hide the Legend. Hiding the Legend increases the display area of partition information.

There are triangle indicators to mark the 2 GB boot boundary and the 1024 cylinder limit. The boundary markers can help you as you create, move, or resize partitions, so you will not make primary partitions unbootable by accident. For additional information about the boot boundaries, refer to "Understanding the BIOS 1024 Cylinder Limit" or "Understanding the 2 GB Boot Code Boundary" in the PartitionMagic online help.

Partition List

The partition list displays the following information about each partition: drive letter, volume label, file system type, size, amount of used and unused space in megabytes, status, and whether the partition is a primary or logical partition.

Primary partition drive letters are flush left, followed by a colon and the volume name. Logical partition drive letters and volume labels are indented. An asterisk (*) appears in place of a drive letter for:

- Hidden partitions
- Extended partitions
- Partitions with file systems not supported by the active operating system
- Unallocated space

A partition's status can be:

- **Active:** The partition the computer boots from.
- **Hidden:** Partitions that do not have a drive letter. Partitions can be hidden by the operating system (which may hide all primary partitions except the active one), or you can hide partitions with PartitionMagic. Under Windows 2000/XP Professional, hidden partitions are permitted to have a drive letter.
- **None:** Partitions that are not active or hidden.

Wizards

To help you quickly and easily complete several common partitioning tasks, PartitionMagic includes these wizards:

- Create new partition

- Redistribute free space
- Resize partitions
- Merge partitions
- Copy partition

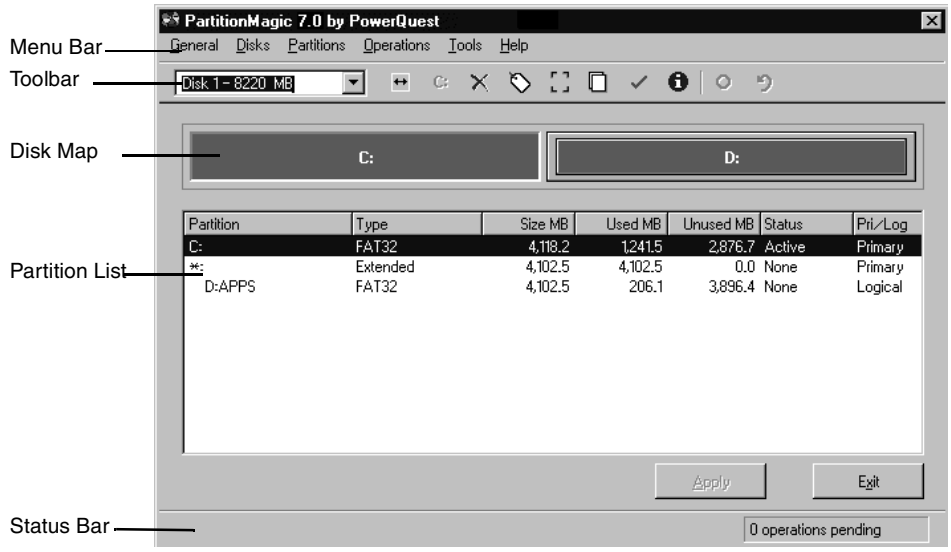
To start a wizard, click the wizard icon or choose a command on the **Wizards** menu. For more information about using the wizards, see “Overview” on page 81.

You do not have access to the wizards if you run PartitionMagic from the rescue disks.

Rescue Disk Main Window

The main screen appears different when you run from rescue disks than it does when you run PartitionMagic from Windows.

- **Menu bar** — gives you access to all of PartitionMagic’s features.
- **Toolbar** — gives you quick access to commonly used options and allows you to select the disk you want to operate on.
- **Partition information** — provides both a visual and text description of the partitions on the disk.
- **Status bar** — shows you how many operations are pending; also includes a brief description of the currently selected option.



Process Overview

To complete a task, follow this general process:

1. Select a hard disk and partition.

   The steps for selecting a hard disk and partition are included in this chapter of the user guide. **You must follow these steps before you can perform any operation within PartitionMagic.**

2. Select an operation and enter details about the changes you want to perform.

3. Apply changes to your system.

You can also perform some tasks using the wizards. Refer to “Overview” on page 81 for information about the wizards.

Selecting a Hard Disk

There are three ways to select a hard disk:

- In the tree view on the left side of the main window, click the icon for the disk.
- On the disk map, click the title bar for the disk. You may need to scroll through the disk map area if you have several hard disks on your machine.
- From the **Disks** menu, choose the disk you want.

When you select a disk, its partitions display in the partition list in the main window.

PartitionMagic supports external USB hard drives through Windows.

Using PartitionMagic with Removable Media

PartitionMagic is not designed to work on removable media. PowerQuest technical support does not guarantee they will be able to resolve problems you encounter when partitioning removable media.

Windows 2000 Disks

Windows 2000 uses basic disks and dynamic disks. You cannot perform PartitionMagic operations on dynamic disks.

Selecting a Partition

There are three ways to select a partition:

- In the tree view on the left side of the main window, click the partition. If the tree view is not displayed, click **View ➤ Tree View**.
- On the disk map, click the partition. You may need to scroll through the disk map area if you have several hard disks on your machine.
- In the partition list, click the partition.

The selected partition is highlighted in all three locations.

(PartitionMagic Pro only) If Remote Agent is running, you can select a partition on a remote machine. See “PartitionMagic Pro Features” on page 85.

Selecting an Operation

After you have selected a disk and a partition, you can select an operation using the toolbar, the context menu, the menu bar, or the keyboard. If an operation cannot be performed on the selected partition, the operation is unavailable (menu item appears dimmed).

- Click one of the operations buttons on the toolbar.

  When you place the pointer on a toolbar button, a pop-up window displays the button's function.

- In the disk map or partition list, right-click the partition you want to change, then click the desired operation from the context menu.
- On the menu bar, click **Operations**, then choose the desired operation.
- Press **<Alt+O>**, then type the underlined letter of the desired operation.

For more information about the items on the **Operations** menu, see *Chapters 3, 4, and 5* of this user guide.

Undoing an Operation

There are three ways to undo or reverse the last operation performed:

- Click on the toolbar.
- Click **General ➤ Undo Last Change** on the menu bar.
- Press <Ctrl+Z>.

If you have performed an operation using a wizard, Undo Last will undo all the changes made by the wizard.

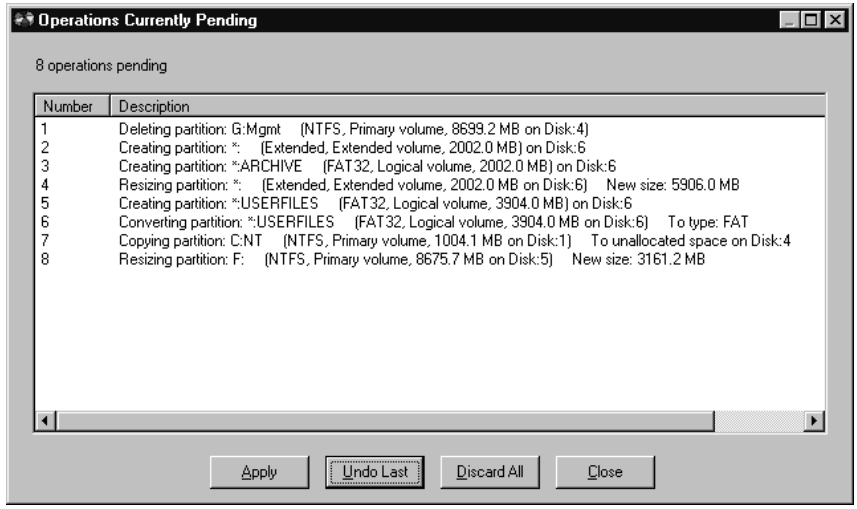
To discard all the changes performed and start over, click **General ➤ Discard all Changes**, or press <Ctrl+D>.

Viewing Pending Operations

PartitionMagic queues operations until you apply them. You can view the operations that are pending at any time.

1. Click **View ➤ Operations Pending**.

The **Operations Currently Pending** dialog appears.


Operations Currently Pending
8 operations pending
Number
Description
1 Deleting partition: G:Mgmt (NTFS, Primary volume, 8699.2 MB on Disk:4)
2 Creating partition: *: (Extended, Extended volume, 2002.0 MB) on Disk:6
3 Creating partition: *:ARCHIVE (FAT32, Logical volume, 2002.0 MB) on Disk:6
4 Resizing partition: *: (Extended, Extended volume, 2002.0 MB on Disk:6) New size: 5906.0 MB
5 Creating partition: *:USERFILES (FAT32, Logical volume, 3904.0 MB) on Disk:6
6 Converting partition: *:USERFILES (FAT32, Logical volume, 3904.0 MB on Disk:6) To type: FAT
7 Copying partition: C:NT (NTFS, Primary volume, 1004.1 MB on Disk:1) To unallocated space on Disk:4
8 Resizing partition: F: (NTFS, Primary volume, 8675.7 MB on Disk:5) New size: 3161.2 MB
Apply
Undo Last
Discard All
Close

From the list of pending operations, you can choose to undo the last change, discard all changes, apply all changes, or close the window.

If you are running PartitionMagic from the rescue disks, you cannot modify pending operations from this window.

Applying Changes to Your System

As you complete tasks using the **Operations** menu, the disk map and partition list reflect the changes you have made. However, no changes physically take place on your system until you apply them. You can perform several operations and then apply all the changes at once.

You can tell when changes have been made but not yet applied to your system when the status box in the lower right corner of the main window indicates that operations are pending. If the wizard icons are displayed, the **Apply Changes** and **Undo Last** icons also display at the bottom of the window when there are operations pending.

To apply changes to your system, click **General ➤ Apply Changes**, or click on the toolbar. If the wizard icons are displayed, you can also click the **Apply Changes** icon at the bottom of the window. If you have open files, PartitionMagic may need to reboot your computer and apply the changes in boot mode.

You can click **Apply Changes ➤ Details** to view a list of the operations that will be applied.

To discard the changes and start over, click **General ➤ Discard All Changes**. With the exception of being able to undelete some partitions, you cannot discard or undo changes after you have applied them.

Supported File Systems

You can create or modify the following partition types with PartitionMagic. Before making modifications, you should ensure that both the partition type and operating system on your machine are supported by PartitionMagic.

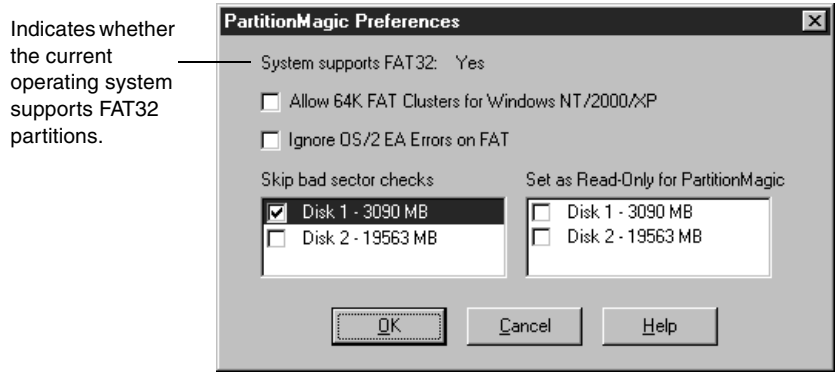
Partition Type	Description
Extended	The extended partition gets around the arbitrary four-partition limit for a disk. An extended partition is a container in which you can further divide your disk space by creating logical partitions. An extended partition does not directly hold data. You must create logical partitions within the extended partition to store data.
Extended X	An extended x partition functions like an extended partition but is not limited to the first 1024 cylinders on a drive. Linux kernels below 2.2 do not support extended x partitions.
FAT	Uses file allocation table (FAT) and clusters. The FAT file system is used by DOS, Windows 3.x, and most Windows 95 installations. A FAT partition is also accessible by all newer operating systems.
FAT16x	FAT16x is a proprietary file system developed by Microsoft to enable FAT partitions beyond 1024 cylinders (~8GB).

Partition Type	Description
FAT32	FAT32 is an enhancement of the FAT file system. It uses 32-bit file allocation table entries, rather than the 16-bit entries used by the FAT system, so FAT32 supports larger disk or partition sizes (up to 2 terabytes). The minimum size for a FAT32 partition is 256 MB. A FAT32 partition is only accessible by Windows 95 OSR2 (version 4.00.950B), Windows 98, Windows Me, and Windows 2000. DOS, Windows 3.x, Windows NT 3.51/4.0, and earlier versions of Windows 95, don't recognize FAT32 and cannot use files on a FAT32 partition.
FAT32x	FAT32x is a proprietary file system developed by Microsoft to enable FAT32 partitions beyond 1024 cylinders (~8GB). Windows 95 OSR2 and later versions of Windows may use FAT32x partitions.
Linux Ext2	The Linux Ext2 file system is only accessible by Linux, a freeware version of UNIX. The Linux Ext2 file system supports a maximum partition size of 4 terabytes.
Linux Swap	Holds a Linux swap file. The maximum usable size of a Linux swap file is 128 MB. (This limitation, however, does not apply if you are using a Linux Kernal that is verion 2.2.x or later.) The default size shown when you create a Linux swap partition may be slightly larger because of the physical geometry on the hard disk.
NTFS	The New Technology File System (NTFS) is accessible only by Windows NT and Windows 2000. NTFS is not recommended for use on disks less than 400 MB because it uses a great deal of space for system structures.
Unformatted	Unformatted partitions reserve a portion of the disk but are not assigned a file structure.
Unallocated space	Unallocated space is the portion of a hard disk that is not currently assigned to any partition.

Changing PartitionMagic Preferences

1 In the main window, click **General ➤ Preferences**.

A check mark next to a preference indicates it is enabled.


Indicates whether the current operating system supports FAT32 partitions.
PartitionMagic Preferences
System supports FAT32: Yes
Allow 64K FAT Clusters for Windows NT/2000/XP
Ignore OS/2 EA Errors on FAT
Skip bad sector checks
Disk 1 - 3090 MB
Disk 2 - 19563 MB
Set as Read-Only for PartitionMagic
Disk 1 - 3090 MB
Disk 2 - 19563 MB
OK
Cancel
Help

2 Click checkboxes to enable or disable preferences, then click **OK**.

Allow 64K FAT Clusters for Windows NT/Windows 2000/XP

This preference lets you create FAT partitions with 64 KB clusters, which allows you to use PartitionMagic to create FAT partitions up to 4 GB.

IMPORTANT! Because DOS, Windows 3.x/95/98/Me do not support cluster sizes larger than 32K, you cannot access a 64K partition using these operating systems. You should only use 64K partitions with Windows NT/2000/XP. If you are using multiple operating systems, PowerQuest recommends not using 64K clusters.

When enabled, the 64K cluster size is available in the **Resize/Move Partition** and **Resize Clusters** dialogs.

Ignore OS/2 EA Errors on FAT

This preference tells PartitionMagic whether to ignore OS/2 Extended Attribute errors when it checks a FAT partition.

WARNING! If OS/2 is on your computer, do not enable this preference. Data loss could occur because problems might go undetected.

Skip Bad Sector Checks

When PartitionMagic modifies partitions, it performs extensive testing to detect bad sectors on your hard disk. Newer disk types (such as Enhanced IDE and SCSI) often handle bad sectors internally, making such testing superfluous. For this reason, PartitionMagic lets you bypass these tests with **Skip Bad Sector Checks**. When this preference is enabled, the Resize/Move, Create, Copy, and Format operations run faster.

WARNING! If you skip bad sector checks and your hard disk has bad sectors, data loss can result.

Bad sector checking is on by default. PartitionMagic lets you set this preference individually for each of your hard disks. If your system has an older disk and a newer one, you could check the older disk and skip the newer one. A check mark next to a disk means to skip bad sector checking for that disk.

Set as Read-Only for PartitionMagic

This preference lets you prevent PartitionMagic from making any changes to a hard disk. You can set this preference individually for each of your hard disks.

There are some exceptions to how this preference is applied:

- If the disk contains the boot partition, some files may be changed, such as the Windows NT boot initialization (BOOT.INI) file.
- If you tell PartitionMagic to run DriveMapper automatically, certain files, such as initialization files and shortcut files, may be changed.

Using International Keyboards

When you use the DOS version of PartitionMagic (see "Running PartitionMagic from Rescue Disks" on page 7), you may lose the ability to use your keyboard the way you are accustomed to or to view extended characters properly. The PartitionMagic rescue disks include the files you need to resolve these problems.

If you use an international keyboard or character set, you must edit the AUTOEXE2.BAT and CONFIG.SYS files on the rescue disks.

1. The following lines are remarked in the AUTOEXE2.BAT file. Delete the `REM` from the beginning of the line, and replace the variables *xx* and *yyy* with the keyboard code and character set code page for your language.

   ```
   MODE CON CP PREP=((yyy)EGA.CPI)
   ```

```
MODE CON CP SEL=yyy
KEYB xx,yyy
```

xx = two-letter keyboard code (for example, US or FR)
yyy = character set code page (for example, 437)

2. Save the AUTOEXE2.BAT file.

3. The following line is remarked in the CONFIG.SYS file. Delete the `REM` from the beginning of the line, and replace the variable *yyy* with the character set code page for your language.

```
DEVICE=DISPLAY.SYS CON=(EGA,yyy,)
```

4. Save the CONFIG.SYS file.

5. Reboot from the first rescue disk.

Defragmenting a Hard Drive

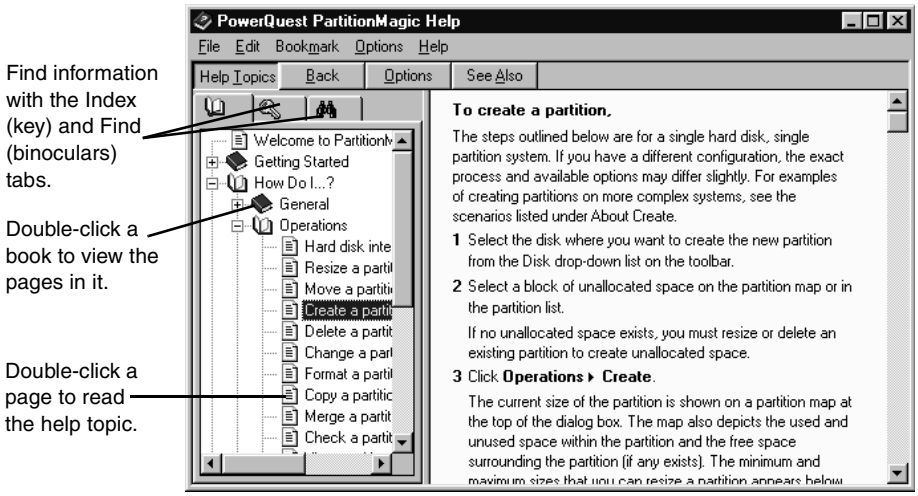
Defragmenting your hard drive will optimize the storage of data by organizing your files in a contiguous order. You can run Windows Defragmenter within PartitionMagic for Windows. Right-click a partition in the disk map, then select **Windows Defragmenter** from the menu. PartitionMagic will lock and Windows Defragmenter will run. When the disk is defragmented, Windows Defragmenter will close, and PartitionMagic will unlock so you can continue running it.

Getting Help

PartitionMagic Help provides in-depth information on features as well as step-by-step instructions for specific tasks.

To access Help, click **Help ➤ Contents** on the menu bar in the PartitionMagic main window.

The **PowerQuest PartitionMagic Help** is organized into books and pages.


Find information with the Index (key) and Find (binoculars) tabs.
Double-click a book to view the pages in it.
Double-click a page to read the help topic.
PowerQuest PartitionMagic Help
File Edit Bookmark Options Help
Help Topics Back Options See Also
Welcome to PartitionM
Getting Started
How Do I...?
General
Operations
Hard disk inte
Resize a partit
Move a partiti
Create a partit
Delete a partit
Change a part
Format a partit
Copy a partitic
Merge a partit
Check a partit
To create a partition,
The steps outlined below are for a single hard disk, single partition system. If you have a different configuration, the exact process and available options may differ slightly. For examples of creating partitions on more complex systems, see the scenarios listed under About Create.
1 Select the disk where you want to create the new partition from the Disk drop-down list on the toolbar.
2 Select a block of unallocated space on the partition map or in the partition list.
If no unallocated space exists, you must resize or delete an existing partition to create unallocated space.
3 Click Operations ▸ Create.
The current size of the partition is shown on a partition map at the top of the dialog box. The map also depicts the used and unused space within the partition and the free space surrounding the partition (if any exists). The minimum and

Each book focuses on a different aspect of PartitionMagic, so you can quickly locate the information you need. When you double-click a topic, the information displays in the right window.

You can click the key tab to search for a topic using keywords.

Context-Sensitive Help

By clicking **Help** in the lower right corner of a dialog, you can open context-sensitive help for the dialog. Clicking **Hints** in a wizard dialog displays helpful information about the task the wizard is performing.

README File

The README.TXT file includes information that changed since this guide was written, corrections to the manual or help system, and information specific to installation or configuration issues.

CHAPTER 3

Managing Partitions

This chapter includes the following information:

- Integrity Checks
- Resizing and Moving Partitions
- Creating Partitions
- Deleting Partitions
- Undeleting Partitions
- Changing Partition Labels
- Formatting Partitions
- Copying Partitions
- Checking Partitions for Errors
- Merging Partitions
- Splitting Partitions
- Getting Information About Partitions
- Scanning a Disk for Errors

Integrity Checks

PartitionMagic checks disk integrity with a sophisticated system of analysis and validation that operates behind the scenes every time you start the program or complete an operation. An initial integrity check scans your disk and reports any partition problems that may

prevent PartitionMagic from operating properly. This integrity check acts as an early warning system that informs you of your disk's status and assures that the disk's structure is thoroughly analyzed and verified before you alter it.

If your physical disk passes the initial integrity check, you can select the disk's partitions and use PartitionMagic's options; otherwise, an error message appears instead of the partition list. This indicates a problem with your disk, not with PartitionMagic (because no disk modification operations have been initiated). If PartitionMagic finds errors that it can fix automatically, you will be prompted. It is safe to allow PartitionMagic to fix errors. Correct the disk problem, and then restart PartitionMagic. For additional information, see "Resolving Partition Table Errors" on page 125.

In addition to the integrity check at startup time, PartitionMagic performs two integrity checks during any operation. The first check tests the integrity of the file system in the partition before an operation begins (similar to CHKDSK or ScanDisk), and the second check validates your disk's data after an operation is completed. From start to finish, PartitionMagic examines your disk and informs you immediately if it detects any irregularities.

Resizing and Moving Partitions

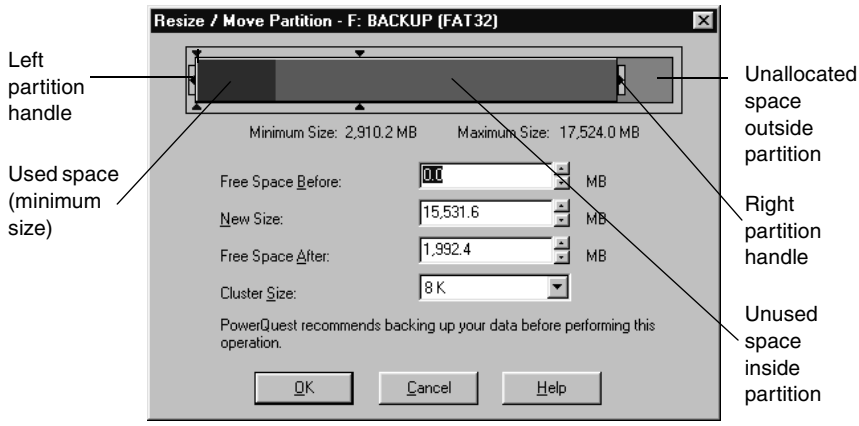
The Resize/Move operation lets you change the size of a partition and/or move it to another location on a hard disk.

1. Select the partition you want to resize/move.

   You cannot move Windows NT volume or stripe sets with parity created by Disk Administrator.

2. Click **Operations ➤ Resize/Move**.

The **Resize/Move Partition** dialog appears.



The current size of the partition is shown on a disk map at the top of the dialog. The map also depicts the used and unused space within the partition and the unallocated space surrounding the partition (if any exists). The minimum and maximum sizes to which you can resize the partition appear below the map.

3 Choose whether to resize or move the partition.

To do this:	Do this:
Move	**1** Place the pointer on the partition. The pointer changes to . **2** Drag the partition to the desired location. There must be unallocated space adjacent to the partition to move it. If there is none, and the partition contains unused space, make the partition smaller and then move the partition. You cannot move unknown partitions, partitions failing the Check for Errors operation (see "Checking Partitions for Errors" on page 49 for more information), or unallocated space.

To do this:	Do this:
Move *(continued)*	Your Windows NT system (service pack 4 or higher) partition cannot be moved past 4 GB, or Windows NT will not be bootable. ***IMPORTANT!*** Exercise caution when moving a bootable partition. Operating systems can become unbootable if moved beyond certain boundaries. For more information, see "Creating Bootable Partitions" on page 37.
Resize	**1** Place the pointer on the left or right partition handle. The pointer changes to ↔. **2** Drag the handle until the desired partition size is reached. You can also resize the partition by typing new values in the **Free Space Before**, **New Size**, and **Free Space After** boxes or by clicking the arrows next to the boxes. The values you enter may change slightly to values supported by the drive's geometry. The arrow buttons resize the partition by the minimum increment, allowing you to make very fine adjustments. Changes are reflected in the disk map. To make a partition smaller, unused space must exist within the partition. To enlarge a partition, there must be unallocated space adjacent to it. For additional information about resizing partitions, refer to "Notes about Resizing Partitions" below. ***IMPORTANT!*** *(Windows NT only)* Resizing your NTFS system partition over 7.8 GB may render your workstation unbootable. If you resize an NTFS system partition over this limit by accident, you can recover your system by using the PartitionMagic rescue disks to resize the NTFS system partition below 7.8 GB.

If you know your disk has no bad sectors, **Skip bad sector checks** in **Preferences** to make Resize and Move operations faster.

4 *(Optional)* Click the **Cluster Size** drop-down list and select a new size or use the recommend cluster size that is already selected.

PartitionMagic changes the **Free Space Before**, **New Size**, and **Free Space After** values to show how the partition size is affected.

This option is only available for FAT and FAT32 partitions. For more information, see "Resizing Clusters" on page 66.

5 Click **OK**.

Notes about Resizing Partitions

When you resize a partition, data is consolidated, not compressed. To make a partition smaller, unused space must exist within the partition. To enlarge a partition, there must be adjacent unallocated space. If there is unallocated space on the disk, but it is not adjacent to the partition you want to enlarge, adjust the location of the space by moving other partitions.

IMPORTANT! Exercise caution when resizing partitions smaller, especially a partition containing an operating system. Leave at least 50 MB more space in the partition than the operating system requires. Swap files, drivers, and other files may require the extra space. Additionally, operating systems can become unbootable if moved beyond certain boundaries. For more information, see "Creating Bootable Partitions" on page 37.

Resizing FAT and FAT32 partitions smaller may reduce the amount of wasted space on a hard disk. When you resize a FAT or FAT32 partition, PartitionMagic automatically resizes the clusters to their optimal size for the partition. For more information, see "Resizing Clusters" on page 66.

You should be aware of the following limitations when resizing partitions:

- You cannot make a partition smaller unless it contains unused space. You can only reduce a partition to the used size shown in the disk map plus a small buffer area. During a Resize/Move operation, data is consolidated to the front of the partition as needed, but no data compression takes place. Because of the way a FAT partition is structured, you can often resize a partition a second time and make it even smaller or larger than the first time you resized it.
- In certain instances, you cannot make a FAT partition larger when the partition contains no unused space. If you have a full partition and plenty of unallocated space adjacent to it, yet are not able to enlarge your partition, you may have to delete some files in the partition so that PartitionMagic has room to work. You may be able to slightly enlarge the partition (1 MB or less) and then enlarge the partition a second time to provide the necessary buffer area for PartitionMagic. To see how much space

is needed in a partition to resize past a cluster boundary, see the table in "Freeing Disk Space Before Enlarging a FAT Partition" in Help.

- It is difficult to calculate in advance the minimum size to which an NTFS partition may be resized. If PartitionMagic runs out of space when you are resizing or moving an NTFS partition, PartitionMagic returns an error without completing the operation. The integrity of the NTFS partition and data is never compromised.
- A FAT partition has a 2 GB size limit; however, a FAT partition under Windows NT (service pack 4 or higher) or Windows 2000/XP can be sized up to 4 GB and have a 64 KB cluster size.

Scenario 1: Adding Free Space to a Logical Partition

This scenario outlines the procedure for adding space to a logical partition. You can also use the Resize Partitions wizard to perform the same operations.

Sample Configuration

One 1 GB hard disk containing:

- One active primary FAT32 partition (C:) running Windows 98
- One extended partition enclosing one logical FAT partition (D:)

Objective

Resize drive C: smaller and add the newly created free space to drive D:.

Procedure

1. Resize drive C: smaller by the amount you want to add to drive D:.

   Resize C: so that the unallocated space is on the right.

2. Enlarge drive D: to occupy the unallocated space just created.

   The extended partition is automatically enlarged to accommodate drive D:.

3. Apply the changes to your system.

Result

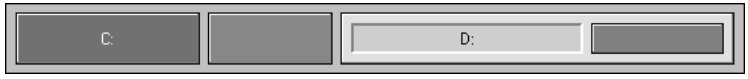
Drive D: has room for additional files.

Scenario 2: Adding Free Space to a Primary Partition

Sample Configuration

One 4 GB hard disk containing:

- One active primary FAT32 partition (C:) running Windows 98
- One hidden primary NTFS partition
- One extended partition enclosing one logical FAT partition (D:) and a block of unallocated space



Objective

Add the block of free space to the NTFS partition.

Procedure

1. Move drive D: to the right (so the unallocated space is on the left).
2. Enlarge the NTFS partition to occupy the unallocated space.

   The extended partition is automatically resized down to accommodate the new NTFS partition size.
3. Apply the changes to your system.

Result

The NTFS partition has room for growth and adequate space for operating system files such as drivers and swap files.

Creating Partitions

The Create operation lets you create primary partitions, extended partitions, and logical partitions.

If you have multiple hard disks and partitions, the process and available options may differ slightly from the following steps. For examples of creating partitions on more complex systems, see the scenarios that begin on page 41 of this user guide.

1 Select a block of unallocated space.

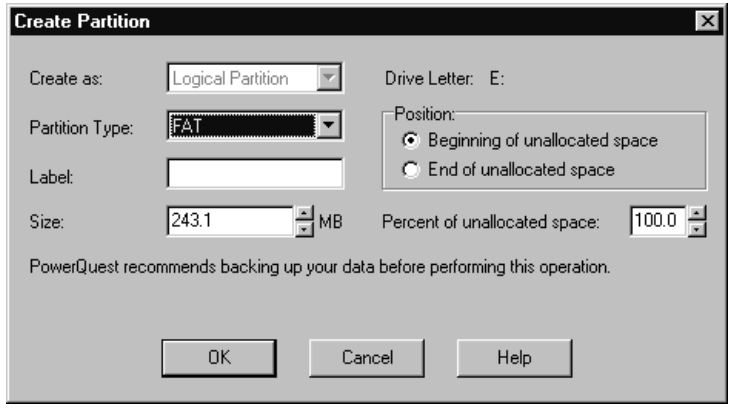
If no unallocated space exists, you must resize or delete an existing partition to create unallocated space. For instructions on resizing and deleting partitions, see "Resizing and Moving Partitions" on page 28 and "Deleting Partitions" on page 43.

If Remote Agent is running, you can create a partition on a remote machine.

On a single hard disk, you can have up to four primary partitions or three primary partitions and one extended partition. Within an extended partition, you can create unlimited additional subdivisions called logical partitions.

2 Click **Operations ➤ Create**.

The **Create Partition** dialog appears.



3 From the **Create as** drop-down list, select **Logical Partition** or **Primary Partition**.

You should create primary partitions to install operating systems and logical partitions for all other purposes (such as storing data and applications). If you have multiple hard disks, you can improve speed by installing operating systems and applications on separate disks. If you do not know what type of partition you want to create, see "Understanding Partitions" in Help.

You should create a primary partition if you plan to install an operating system. Refer to “Creating Bootable Partitions” on page 37 and “Installing a New Operating System” on page 38 for additional information.

If you select **Logical Partition**, PartitionMagic automatically creates an extended partition to enclose the logical partition, or, if you already have an extended partition, resizes the extended partition larger to encompass the logical partition. (The free space must be inside of or adjacent to the extended partition.)

If **Logical Partition** is unavailable, you may already have four primary partitions on the hard disk. Or, if you have an extended partition, you may not have selected a block of free space inside of or adjacent to the extended partition.

If you create a second, third, or fourth primary partition on a physical disk, PartitionMagic will create the new primary partition as unhidden. However, PartitionMagic will automatically hide the other primary partitions on that disk when performing a Set Active operation.

4 From the **Partition Type** drop-down list, select the desired file system type:

FAT is the most common file system type. It is used by DOS and all versions of Windows.

FAT32 is used by Windows 95 OEM Service Release 2, Windows 98, Windows Me, Windows 2000, Windows XP.

NTFS is used by Windows NT, Windows 2000, Windows XP.

Linux Ext2 and **Linux Swap** are used only by Linux.

Extended creates an extended partition which can contain any number of logical partitions. **Extended** is not an option if the hard disk already contains an extended partition or four primary partitions.

Unformatted creates an unformatted partition on your hard drive.

5 *(Optional)* Enter a label for the new partition.

Labels can be up to 32 alphanumeric characters for NTFS partitions and up to 11 alphanumeric characters for other file system types.

6 In the **Size** box, enter the desired size for the partition. Or, in the **percent of unallocated space** box, enter the desired percent of unallocated space for the partition.

PartitionMagic automatically calculates a recommended size (based on the most efficient use of disk space), which you can accept or change.

If you are creating a Windows NT 4.0 (service pack 4 or higher) system partition, it cannot be larger than 4 GB.

7 If the size you specified for the new partition is smaller than the available unallocated space, you can position the partition at the beginning (recommended) or end of the unallocated space. In the **Position** box, click **Beginning of free space** or **End of free space**.

8 In the **Drive Letter** box, note the drive letter that will be assigned to the new partition after you reboot.

9 Click **OK**.

If you created a new primary partition and plan to install an operating system on it, refer to "Installing a New Operating System" on page 38 for additional information.

WARNING! Because of conflicts that can result from different hardware and system configurations, do not create an applications or operating system partition on one computer and then move that hard disk to another computer. Data loss may occur.

Managing Drive Letter Changes

Creating a new partition may cause your drive letters to change. For example, if you have one primary partition (C:) on your hard drive and a CD-ROM drive (D:), and you create a new logical partition on your hard drive, the new partition becomes D: and the CD-ROM drive changes to E: after you reboot your computer. As a result, any programs on your hard drive that were linked to the CD-ROM no longer function because the paths to files have changed.

PowerQuest recommends that you allow DriveMapper to automatically update the drive letter references in application shortcuts, initialization files, and registry entries when prompted to do so. However, you can update drive letter references manually. See "Changing Drive Letter References with DriveMapper" on page 98.

While you can use DriveMapper to update references to files, for least impact, consider creating all new partitions on the highest disk (for example, disk 3 in a three-disk system) and to the right of existing partitions.

Creating Bootable Partitions

Before creating a partition where you plan to install an operating system (a bootable partition), you should understand the information outlined in the following table

Operating System	Boots from Primary or Logical	Supported Partition Types	Boot Code Boundary	Space Required
DOS 6.22 and earlier	Primary	FAT	2 GB	8 MB
Windows 95a	Primary	FAT	2 GB	90 MB
Windows 95b	Primary	FAT or FAT32	8 GB	90 MB
Windows 98	Primary	FAT or FAT32	8 GB	175 MB
Windows 98se	Primary	FAT or FAT32	8 GB**	190 MB
Windows Me	Primary	FAT or FAT32	8 GB**	300 MB
Windows NT	Primary*	FAT or NTFS	2 GB	120 MB
Windows 2000	Primary*	FAT, FAT32, or NTFS	8 GB**	650 GB
Windows XP	Primary*	FAT, FAT32, or NTFS	8 GB**	>1 GB
Linux (LILO***)	Either	Linux Ext2**** and Linux Swap	8 GB	>250 MB

* Windows NT/2000/XP must boot from a primary partition on the first drive. However, only a few files must reside on that partition; the remaining files can reside on a logical partition, which can be located on the first or a subsequent drive. The Windows NT/2000/XP boot partition can be shared with another operating system. Additionally, Windows NT must be installed on a FAT partition, and Windows 2000/XP must be installed on a FAT or FAT32 partition. During the installation, you can convert the partition to NTFS.

** Having an LBA-compatible (Logical Block Addressing) MBR (Master Boot Record) will make the boot code boundary null with Windows Me/2000/XP.

*** If you install LILO to a logical partition, it must be the first logical partition in the extended partition.

**** Linux also supports the partition types FAT, FAT32, and NTFS (read-only) if Linux is installed to a Linux Ext2 partition.

IMPORTANT! When you create, move, or resize a bootable partition, the partition must begin below the boot code boundary specified in the above table in order for the operating system to boot. With the exception of DOS 6.22 (or earlier), partitions beyond 8 GB are visible to the current operating system. For more information, see "Understanding the BIOS 1,024 Cylinder Limit" and "Understanding the 2 GB Boot Code Boundary" in Help. The disk map in the PartitionMagic main window displays indicators for the 2 GB boot boundary and the 1024 cylinder (8 GB) limit.

PartitionMagic displays a warning if you attempt to create, move, or resize a bootable partition outside of the 2 GB boot code boundary. If you continue with the operation, you may not be able to boot or to see the partition. In either case, you can resolve the problem by moving the partition back within the boot code boundary with the PartitionMagic rescue disks.

If your system includes SCSI disks and you create a partition before a bootable Linux partition, Linux may no longer be bootable. In this situation, you may need to create Linux rescue disks, boot from the rescue disks, and repair the Linux boot information on the Linux partition.

Some I/O cards (typically older RAID cards) only provide access to the first 8 GB of a disk under DOS. Consequently, if you resize the operating system partition beyond 8 GB and it becomes unbootable, the PartitionMagic rescue disks may not allow you to manipulate partitions on that drive. You should be cautious about resizing any operating system partition beyond 8 GB.

Installing a New Operating System

If you install multiple operating systems, you must follow the steps below for each of them. For detailed information about installing operating systems, refer to OPERATE.PDF in the English\Docs folder on the PartitionMagic CD.

1. Disable BootMagic if you have it installed.
2. Create PartitionMagic rescue disks.

   See "Creating Rescue Disks" on page 5.

3 Make a new partition and set it active (if you are installing Linux to a primary partition [Linux Ext2], then it is necessary to set the partition active; however, it is not necessary to set the partition active if you are installing Linux to the first logical partition on the hard disk.)

   See “Setting an Active Partition” on page 65.

   Most operating systems must be installed on primary partitions. See “Creating Bootable Partitions” on page 37 for exceptions.

   If you are not certain that the partition where you want to install the operating system will support an operating system, you should create a new operating system partition using the Create Partition wizard. See “Create New Partition Wizard” on page 82.

4 Close all programs and reboot the computer using an operating system installation diskette.

5 Install the operating system.

   PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

6 If you have already installed BootMagic, use the PartitionMagic rescue disks to set the partition active where BootMagic is installed.

   If you have not installed BootMagic, use the PartitionMagic rescue disks to set the operating system partition active for where you want BootMagic installed. Then install BootMagic.

7 *(If applicable)* With BootMagic installed, add the operating system to your BootMagic configuration so that you can select the operating system you want to boot.

   For more information about BootMagic, see “Using BootMagic” on page 103.

8 Reboot the computer.

Scenario 1: Creating a Primary Partition for Windows NT

Sample System Configuration

One 4 GB hard disk with one active primary FAT32 partition (C:) running Windows 98.

Objective

Resize drive C: smaller. In the unallocated space created, create a primaryFAT partition where Windows NT can be installed.

Procedure

1. Resize drive C: smaller by 1 GB. For more information, see "Resizing and Moving Partitions" on page 28.

   The partition where you want to install Windows NT must begin in the first 2 GB of the disk, or Windows NT will not be bootable. You may need to move your existing partition to the end of the disk, then create the Windows NT partition at the beginning of the disk.

2. Create a primary partition in the unallocated space using the following information:

   Partition Type: Select **FAT**. Do not select FAT32 unless you are using Windows 2000. Earlier versions do not recognize FAT32 partitions.

   Label: Type one, if desired.

   Size: Type `1250`.

   IMPORTANT! Before performing the next step, make sure you have the Windows NT installation CD and disks; otherwise, you will not be able to boot your computer.

3. Set the new partition active. For more information, see "Setting an Active Partition" on page 65.

4. Apply the changes to your system.

   IMPORTANT! Before installing Windows NT, make sure that all partitions end prior to cylinder 1024. Otherwise, Windows NT will not install and will report that all the partitions are corrupted. If you cannot resize and move all partitions, you must obtain updated drivers from Microsoft (see article ID: Q197667 on the Microsoft web site).

5. Reboot the computer using the first Windows NT installation diskette.

6. Complete the Windows NT installation.

PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

7 Add Windows NT to your BootMagic configuration so that each time you start or restart your computer, you can select the operating system you want to boot. For more information, see "Using BootMagic" on page 103.

Result

When the computer restarts, BootMagic presents a list of the available operating systems, in this case, Windows 98 and Windows NT. Select the operating system you want to boot.

Scenario 2: Creating a Logical Partition on a Secondary Hard Disk

Sample System Configuration

Disk 1 — One 4 GB disk containing:

- One active primary FAT32 partition (C:) running Windows 95.
- One extended partition enclosing one logical FAT partition (E:).

Disk 2 — One 2 GB hard disk containing:

- One 1 GB FAT32 primary partition (D:).
- 1 GB unpartitioned unallocated space.

One CD-ROM drive (F:).

Objective

Create a 1 GB logical FAT partition on Disk 2.

Procedure

1 Select Disk 2.

2 Create a logical partition in the 1 GB unallocated space using the following information:

Partition Type: Select **FAT**.

Label: Type one, if desired.

Size: Accept the pre-calculated size.

Create As: Choose **Logical**.

The partition will be assigned drive F: after reboot. Additionally, an extended partition will automatically be created to enclose the logical partition.

3 Apply the changes to your system.

Result

After the computer reboots, the new logical partition is drive F: and the CD-ROM is drive G:.

Scenario 3: Creating Linux Logical Partitions

Sample System Configuration

One 6 GB hard disk containing:

- One active primary FAT partition (C:) running Windows 95.
- One extended partition enclosing one logical FAT partition (D:) and one logical FAT32 partition (E:).

Objective

Resize drive E: smaller. In the unallocated space created, create one logical Linux Ext2 partition and one logical Linux Swap partition.

Procedure

1 Resize drive E: smaller by 550 MB. For more information, see “Resizing and Moving Partitions” on page 28.

2 Create a logical partition in the unallocated space using the following information:

Partition Type: Select **Linux Ext2**.

Label: Type one, if desired.

Size: Type `500`.

3 Create a second logical partition in the unallocated space using the following information:

Partition Type: Select **Linux Swap**.

Size: Type `50`.

4 Apply the changes to your system.

5 Reboot the computer using your Linux installation diskette.

6 Complete the Linux installation.

You do not need to change the active partition to install Linux.

PowerQuest technical support does not help install operating systems. See your operating system documentation for details.

WARNING! If you are using a boot utility like BootMagic, LILO (Linux Loader) must be installed to the Linux Ext2 partition containing the root directory and not installed to the master boot record. If you install LILO to the master boot record, other operating systems may become unbootable.

7 *(Optional)* Add Linux to your BootMagic configuration so that each time you start or restart your computer, you can select the operating system you want to boot. For more information about BootMagic, see "Using BootMagic" on page 103.

Result

When the computer restarts, BootMagic presents a list of the available operating systems, in this case, Windows 95 and Linux. Select the operating system you want to boot.

Deleting Partitions

The Delete operation deletes a partition and makes its data inaccessible. The Delete and Secure Erase operation destroys the data in a selected partition by overwriting the disk sectors. Once a partition has been shredded, it cannot be undeleted.

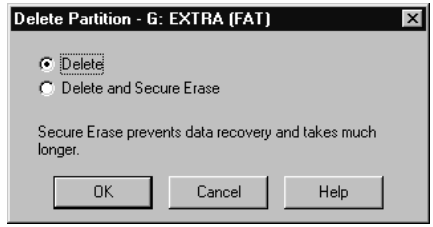
1 Select the partition you want to delete.

   To delete an extended partition, you must first delete all logical partitions within the extended partition. You cannot shred unallocated space.

   If Remote Agent is running, you can delete a partition on a remote machine.

2 Click **Operations ➤ Delete**.

   The **Delete Partition** dialog appears.



3 Click **Delete** or **Delete and Secure Erase**.

4 Click **OK**.

Deleting a partition can make your drive letters change, causing applications not to run because application shortcuts, initialization files, and registry entries refer to incorrect drives.

If your system includes SCSI disks and you delete a partition before a bootable Linux partition, Linux may no longer be bootable. In this situation, you may need to create Linux rescue disks, boot from the rescue disks, and repair the Linux boot information on the Linux partition.

Undeleting Partitions

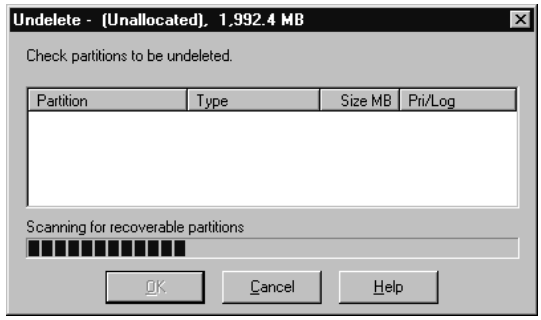
The Undelete operation restores partitions that have been deleted on disk.You can undelete FAT, FAT32, and NTFS partitions. Undelete works best when you use it to restore a partition that you just deleted by accident. If you are undeleting partitions after you have made other changes (written data to them, resized existing partitions, etc.), see “Restrictions on Undeleting Partitions” on page 45.

1 Select the unallocated space to be searched.

2 Click **Operations ➤ Undelete**.

IMPORTANT! You can undelete a partition only if no other operations are pending on the unallocated space selected. If any operations are pending, the undelete icon and menu option will be dimmed (inaccessible).

The **Undelete** dialog appears, and the selected unallocated space is searched.



All primary and logical partitions that can be undeleted are displayed in the scrollable list. If no partitions are found within the unallocated space or none can be undeleted, a message appears indicating no partitions can be undeleted.

3 Within the scrollable list, click the checkbox of the partition you wish to undelete.

While it is possible to undelete more than one partition at once, PowerQuest recommends that you undelete partitions one at a time, beginning with the one that you want most. Doing so helps ensure the integrity of the data within the partition.

4 Click **OK**.

Restrictions on Undeleting Partitions

There are some situations in which a partition that has been deleted cannot be undeleted and will not be displayed in the scrollable list. They include the following:

- You cannot undelete a primary partition if your hard disk contains four primary partitions.
- You cannot undelete a logical partition that was deleted and now is not within the extended partition.
- You cannot undelete a primary partition that was deleted and now is within the extended partition.
- The partition includes file system errors. If PartitionMagic finds a partition, it checks for errors before undeleting it. If the partition has errors, it cannot be undeleted.

- You cannot undelete a partition that has been completely or partially overwritten by another partition or file system. Because of this limitation, if you see two partitions in the **Undelete** dialog and undelete one of them, the other may no longer appear in the list.
- If two deleted partitions claim some of the same disk space, PowerQuest cannot guarantee the integrity of the data in those partitions when they are undeleted. For example, suppose you had two partitions, a 500 MB E: and a 500 MB F: and you deleted F: and resized E: to claim all the space (1 GB). Then you saved data to E:. Later, you deleted E:. Now you want to undelete partitions, and you can see both E: and F: in the **Undelete** dialog. If you restore E:, it is fine and F: is no longer displayed in the dialog (because its space has been claimed). However, if you restore F: instead of E:, you may get some of the data that you had saved to E:. Undeleting F: could make your computer unbootable or cause applications not to run.

Changing Partition Labels

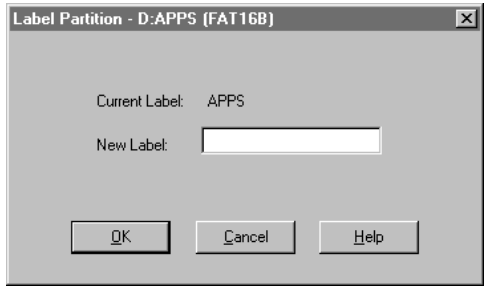
The Label operation lets you change a partition's label. Meaningful names make partition management easier.

1 Select the partition with the label you want to change.

If Remote Agent is running, you can label partitions on a remote machine.

2 Click **Operations ➤ Label**.

The **Label Partition** dialog appears.



3 In the **New Label** box, type the new label.

NTFS volume labels can contain up to 32 alphanumeric characters. FAT volume labels can contain up to 11 alphanumeric characters and cannot contain the following characters: * ? [ ] < > | + = : ; , . \ /".

4 Click **OK**.

Formatting Partitions

The Format operation formats a partition, destroying all its data in the process. Formatting enables you to put a different file system on a partition.

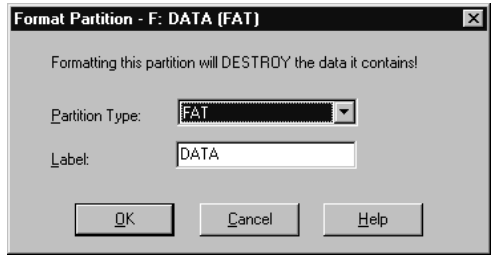
PartitionMagic has several conversion options that let you convert from one file system to another without destroying existing files in a partition. See "Converting Partitions" on page 71.

1 Select the partition you want to format.

   If Remote Agent is running, you can format partitions on a remote machine.

2 Click **Operations ➤ Format**.

   The **Format Partition** dialog appears.



3 From the **Partition Type** drop-down list, select the desired file system type.

   If the partition is too small or too large, some partition types may not be available.

4 *(Optional)* Type a label for the partition.

5 Click **OK.**

Copying Partitions

The Copy operation lets you to make an exact duplicate of a partition. To copy a partition, you must have unallocated space that is equal to or larger than the partition you are copying.

Reasons why you might want to copy a partition include:

- To duplicate your operating system before upgrading to a new version or a different operating system (so that you can remember how the old operating system's windows, program icons, and properties were set up).
- To quickly move a smaller hard disk's contents to a larger, new hard disk.
- To change the relative order of partitions.
- To back up a partition.

1 Select the partition you want to copy.

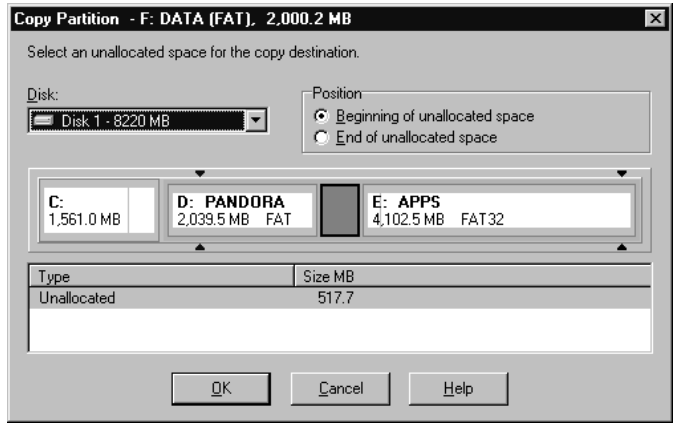
The **Copy** command is dimmed if there is not enough unallocated space on your disks for the partition.

If Remote Agent is running, you can copy partitions to or from a remote machine.

You cannot use PartitionMagic to copy Windows NT stripe sets, stripe sets with parity, or duplex/mirrored sets.

2 Click **Operations ➤ Copy**.

The **Copy Partition** dialog appears.



3 From the **Disk** drop-down list, select the disk where you want to copy the partition.

4 In the partition list, select the unallocated space where you want to copy the partition.

5 If the partition you specified is smaller than the available unallocated space, you can position the partition at the beginning (recommended) or end of the unallocated space. Under **Position**, click **Beginning of free space** or **End of free space**.

If you are copying a logical partition and want to ensure that it remains logical, make sure unallocated space is available within the extended partition. Or, after copying the partition, you can convert it to a logical partition.

6 Click **OK**.

The copy is the same size (or slightly different if copied to a disk with a different geometry) and file system type and contains the same data as the original.

Checking Partitions for Errors

The Check for Errors operation checks the integrity of a partition.

Each time PartitionMagic is started, it performs a check on all attached drives and their partitions. If the check finds a problem, "Check failed" appears in the partition list window under the **Type** column. This check is separate from the Check for Errors operation and is not as exhaustive.

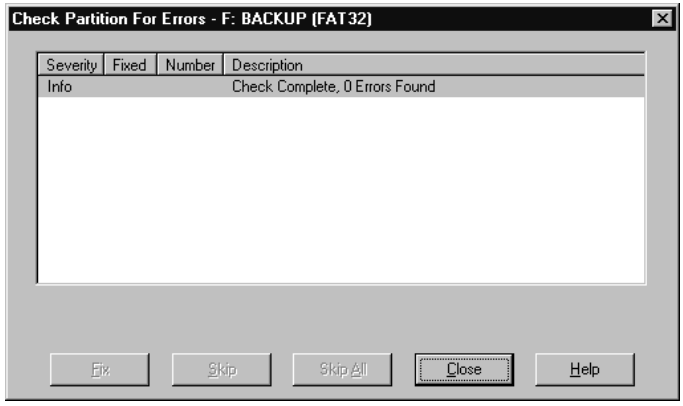
1 Select the partition you want to check.

PartitionMagic can only check partitions that it can lock (that is, partitions that do not have open files on them). If there are open files on a partition, the Check for errors command on the menu will be dimmed.

If Remote Agent is running, you can check partitions on a remote machine.

2 Click **Operations ➤ Check for Errors**.

The **Check Partition Results** dialog appears.



If Check for Errors does not discover any errors, an Info entry appears with "Check Complete" in the **Description** column.

If a Check for Errors operation fails, "Check Failed" appears in the **Used** and **Unused** columns in the partition list. You should fix any errors encountered. For more information, see "Resolving Check Errors" on page 125.

If Check for Errors finds an error, such as cross-linked files, lost clusters, or bad directory information on an NTFS volume and can fix it, a **Fix** button appears at the bottom of the dialog. For each error found, PartitionMagic displays the following:

- **Severity** describes the seriousness of the problem, which can be one of the following:

Severity	Description
Info	The information given is helpful but not critical. Does not correspond to any error.
Warning	The error may or may not cause problems.
Error	A problem was encountered, but PartitionMagic may still be able to make changes to the partition. Run ScanDisk or CHKDSK to fix the error, or click **Fix**, if available.
Critical	A catastrophic problem. PartitionMagic cannot make any changes to the partition.

- **Fixed** displays **Yes** for each problem you fix on an NTFS volume. Not applicable for FAT or FAT32 partitions.
- **Number** shows a number corresponding to the error. For more information, see "Error Messages and Solutions" on page 128.
- **Description** gives a brief description of the problem.

3. To fix an error, highlight the problem and click **Fix**.
4. If you want to skip one listed error, click **Skip**.

   If you want to skip all listed errors, click **Skip All**.
5. When you are finished viewing the check results and fixing NTFS errors, click **Close**.

Check for Errors does not display information about the status and structure of a partition as do the DOS and Windows CHKDSK utilities. To view that information, use the **Info** option. For details, see "Getting Information About Partitions" on page 55.

PartitionMagic checks for OS/2 Extended Attribute errors on FAT partitions. If you do not use OS/2 or previously used OS/2 but no longer do, consider enabling the **Ignore OS/2 EA Errors on FAT** preference, as these errors are not a concern. For more information, see "Changing PartitionMagic Preferences" on page 22. OS/2 users should not enable **Ignore OS/2 Errors on FAT**, as undetected errors could cause data loss.

Merging Partitions

You can merge two FAT, FAT32, or NTFS partitions that are adjacent to each other on a disk. It is useful to merge partitions if you have reached the maximum number of partitions on your disk, but you do not want to delete a partition. It is also useful if you want to combine FAT partitions and convert them to one large FAT32 partition or an NTFS partition.

IMPORTANT! Merging partitions may take a long time (possibly hours), depending on the partition sizes and amount of data they contain. If you wish to check whether your machine is still operating, you can press the NumLock key and see if the light toggles. It may take a few seconds to register activation of the NumLock key on your keyboard. If you plan to merge partitions, you may wish to schedule it for a time when you will not need to use your system for an extended period of time. **If you shut down or turn off your computer while PartitionMagic is still working, it will cause corruption to the file system, which will result in data loss.** Do not shut down the system until after the process is complete.

1. Select one of the two partitions you want to merge with another partition.

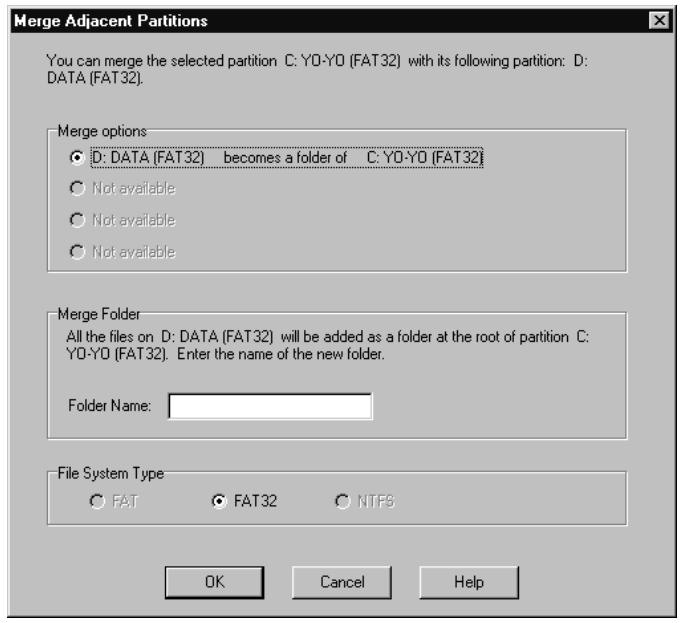
   IMPORTANT! Do not merge compressed partitions. See "Disk Compression Utilities" on page 117 for additional information.

   If you plan to merge two adjacent NTFS partitions, they must be the same version type and have the same cluster size. If the cluster sizes are different, you will not be able to merge the partitions. See "Converting FAT/FAT32 Partitions to 4K Aligned" on page 75 for additional information.

   To view the version type and cluster size of a partition, right-click the partition in the disk map, select **Info**, then click the **NTFS Info** tab.

2. Click **Operations ➤ Merge**.

The **Merge Adjacent Partitions** dialog appears.


Merge Adjacent Partitions
You can merge the selected partition C: YO-YO (FAT32) with its following partition: D: DATA (FAT32).
Merge options
D: DATA (FAT32) becomes a folder of C: YO-YO (FAT32)
Not available
Not available
Not available
Merge Folder
All the files on D: DATA (FAT32) will be added as a folder at the root of partition C: YO-YO (FAT32). Enter the name of the new folder.
Folder Name:
File System Type
FAT
FAT32
NTFS
OK
Cancel
Help

3 In the **Merge options** group box, click the partitions you would like to merge.

The contents of one partition will be moved into a folder within the other partition.

You should not merge partitions that contain different operating systems.

4 In the **Merge Folder** group box**,** type a name for the new folder that will be created in the partition you are keeping.

5 Click a file system type: **FAT**, **FAT32**, or **NTFS**.

The NTFS option will automatically be selected if you are merging two NTFS partitions.

IMPORTANT! If you are combining FAT partitions, be careful not to convert them to FAT32 unless you have access to FAT32 partitions. Early releases of Windows 95 cannot access FAT32 partitions. Windows 95 OSR2 and all later versions of Windows can access FAT32 partitions.

6 Click **OK**.

The disk map in the main window changes to show the merged partitions.

Splitting Partitions

Use Split to divide a FAT or FAT32 partition into two contiguous partitions. It may be useful to split a partition if you have a large set of data or a mixture of data and applications within one partition.

The new partition is created to the right of the original partition; the original and new partitions together occupy the same amount of hard disk space as the original partition. The file system for the partition does not change. For example, if you had a 2 GB FAT partition and you split it, the left and right partitions together would use 2 GB and both would be FAT partitions.

When you split a partition, you can select the files and folders that you want the new partition to include. You can also label the new partition, specify whether it is primary or logical, and specify the new size of the partition.

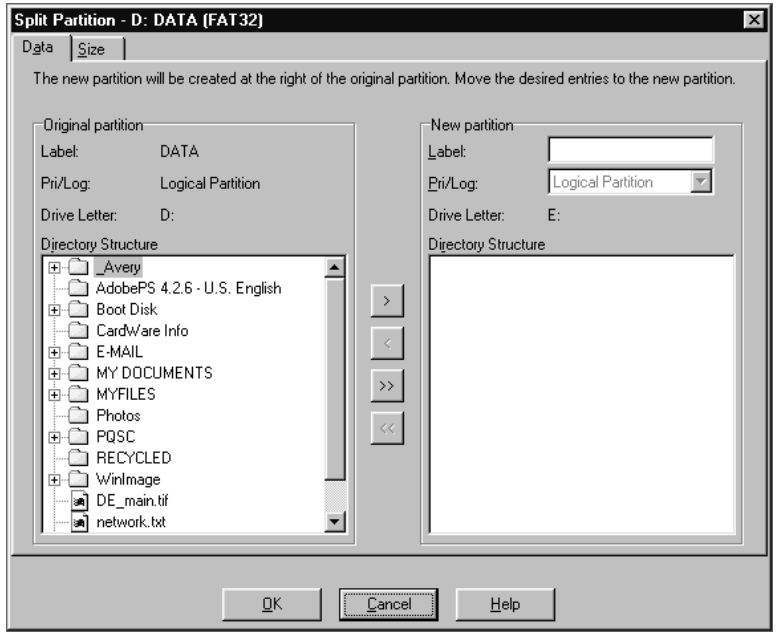
1. Select the partition you want to split.

   You can split a partition if it is 100 MB or larger.

   A FAT partition must have at least 5% unused space, or the Split command will be dimmed on the menu. A FAT32 partition requires 10% unused space to split.

   PowerQuest does not recommend splitting your operating system partition or moving your Windows folders or program files into the new partition.

2 Click **Operations ➤ Split**.



If **Split** is dimmed (unavailable) on the Operations menu, it is most likely because you are trying to split a primary partition when you have already reached the maximum four primary partitions (such as three primary partitions and one extended partition) allowed on a hard disk. You can, however, use Split on a logical partition within an extended partition.

3 Click the **Data** tab.

4 From the **Original Partition** group box, select the files and folders you want to move to the new partition, then click the single right arrow.

Click the left arrow to remove selected files and folders from the new partition. To move all files and folders to the new partition, click the double right arrow. You can also click the left arrow to move selected files and folders back to the original partition if you change your mind. You must, however, have at least one file or folder remaining in each partition.

5 *(Optional)* Type a name for the new partition in the **Label** text box.

6 Select a partition type for the new partition from the **Pri/Log** drop-down list.

You cannot use the Split operation to convert the original partition from primary to logical or vice versa.

7 Click the **Size** tab.

8 Size the new partition by moving the bar on the far right in the disk map, or by typing the number of MB in the Size text box.

The original partition will be adjusted to use the remaining space.

9 Click **OK**.

The size of the new partition is based on the minimum possible size and the total byte size of the files you are adding to the new partition. Any remaining free space is split proportionally between the two partitions according the data in the partitions. For example, if the two partitions used 2 GB and you included 700 MB of data in the original (left) partition and 300 MB of data on the new (right) partition, you would have 1 GB of free space available; the original partition would get 700 MB of unused space, and the new partition would get 300 MB of unused space.

Both the original and new partitions must be at least 40 MB. On hard disks larger than 4 GB, PartitionMagic will round the size of the partition up to at least 47 MB.

Getting Information About Partitions

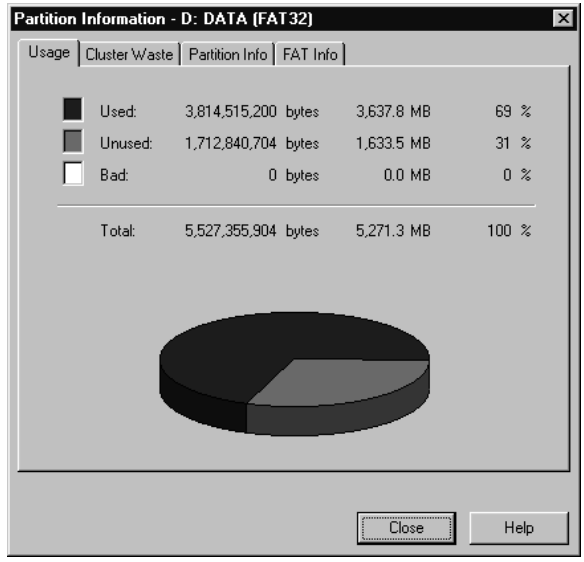
The Info operation displays information about the status and structure of a selected partition.

1 Select the partition you want information about.

If Remote Agent is running, you can get information about a partition on a remote machine.

2 Click **Operations ➤ Info**.

The **Partition Information** dialog appears.



Information is displayed in tabbed pages. To view a page, click its associated tab, which is always visible at the top of the pages. Based on the file system the partition uses, different pages appear.

3. Click the tab for the page you wish to view.

   Each page is described in the following sections.

4. Click **Close** when you are finished viewing information.

Usage

The **Usage** page is available for the FAT, FAT32, and NTFS file systems. This page displays the following information in bytes, megabytes, and as a percentage:

- **Used** space on the partition, including space wasted by clusters
- **Unused** space on the partition
- **Bad** space on the partition
- **Total** space on the partition (the sum of Used, Unused, and Bad space)

Cluster Waste

The **Cluster Waste** page applies only to partitions using theFAT orFAT32 file systems.

This page displays the following information:

- **Current Cluster Size** in bytes or kilobytes
- **Data** stored on the partition in bytes and megabytes
- **Wasted** space on the partition in bytes and megabytes
- **Total** used space in bytes and megabytes (the sum of Data and Wasted space)

Partition Info

The **Partition Info** page is available for all types of partitions, including unallocated space and extended partitions. Information on this page includes the following:

- **Partition type** is shown in hexadecimal followed by a text description of the partition or file system type (such as FAT, FAT32, or NTFS). The hexadecimal designation is the conventional way to display partition types.
- **Serial Number** is shown if the partition's file system uses serial numbers.

The lower portion of the page shows physical information about the partition:

- **First physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition begins.
- **Last physical sector** shows the logical number and the location (cylinder, head, and sector) where the partition ends.
- **Total physical sectors** displays the number of sectors in the partition.
- **Physical Geometry** shows the total number of cylinders, heads, and sectors on the physical disk where the partition resides.

File System-Specific Info Pages

The last page in the **Partition Information** dialog corresponds to the file system used on the selected partition. For example, if the file system is FAT or FAT32, the page is **FAT Info**; if the file system is NTFS, the page is **NTFS Info**, and so forth.

FAT Info

This page applies to partitions using the FAT or FAT32 file systems.

The first section provides the following information:

- **Sectors per FAT** shows the number of sectors in each file allocation table and the number of file allocation tables on the selected partition.

- **Root directory capacity** shows the number of possible entries and the number of sectors in the root directory. Because a FAT32 root directory can grow as needed, this line is blank for FAT32 partitions.
- **First FAT sector** shows the logical sector number within the partition where the FAT begins.
- **First Data sector** shows the logical sector number within the partition where the data portion of the partition begins.

The next section provides the following information:

- The number of bytes in files on the partition, the number of files, and the number of those files that are hidden
- The number of bytes in directories on the partition, the number of directories, and the number of those directories that are hidden

The final section of this page, **FAT Extensions**, provides the following information:

- The number of bytes used for OS/2 Extended Attributes and the number of files and directories affected by Extended Attributes
- The number of bytes used for long filenames and the number of files and directories using long filenames

NTFS Info

This page applies to partitions using the NTFS file system. The first section shows the following information:

- **NTFS Version** shows the version number. The NTFS version does not match the OS version. For example, Windows NT 4.0 uses NTFS version 1.3.
- **Bytes per NTFS sector** displays the number of bytes in each logical sector on the selected partition. (There are always 512 bytes in each physical sector.)
- **Cluster size** displays the size of each cluster and the number of sectors in each cluster on the selected partition.
- **First MFT Cluster** shows the logical number of the first cluster in the master file table (MFT).
- **File Record Size** gives the size of file records in the MFT.

The next section displays information similar to that shown by NT CHKDSK:

- The number of files on the partition and the bytes and clusters allocated to them
- The number of wasted bytes in file clusters

- The number of indexes (directories) and the bytes and clusters allocated to them
- The number of bytes and clusters reserved for other system structures

Scanning a Disk for Errors

MS ScanDisk is a utility included with Windows 9x and Windows Me that you can run from PartitionMagic. ScanDisk scans a partition for errors and fixes them. The Check for Errors operation also scans for errors, but it does not correct them (forFAT orFAT32 partitions).

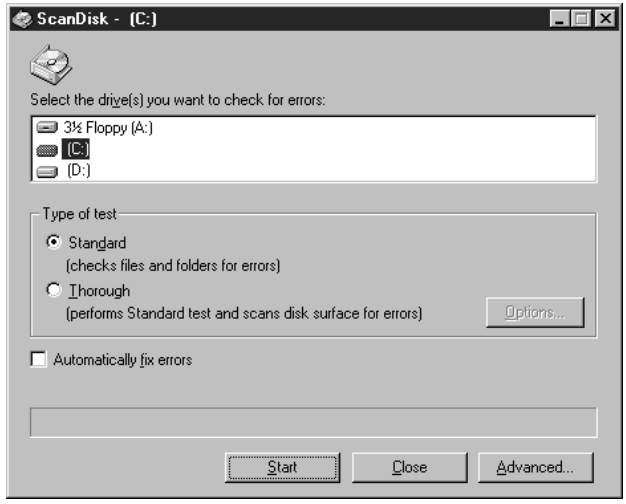
If you are running Windows NT, you must run NT CHKDSK, rather than ScanDisk, from PartitionMagic. The screens for CHKDSK are different from ScanDisk screens. See your Windows NT documentation for more information about CHKDSK.

1 Select the disk you want to scan for errors.

ScanDisk only scans partitions with assigned drive letters; it does not scan hidden partitions, extended partitions, unallocated space, or partitions with file systems not supported by the active operating system.

2 Click **Operations ➤ MS ScanDisk** (or **Windows** CHKDSK) on the menu bar.

The **ScanDisk** dialog appears.



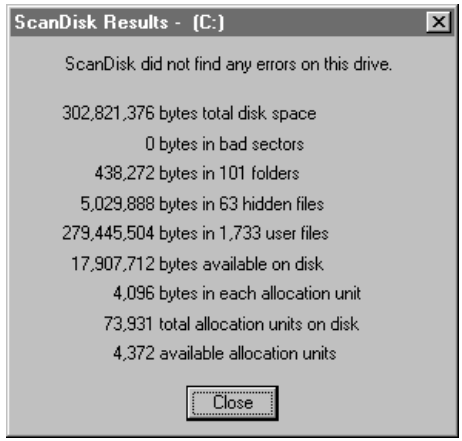
3 In the **Type of test** box, click **Standard** or **Thorough**.

Thorough scans the partition for bad sectors.

4 *(Optional)* Click **Automatically fix errors**.

5 Click **Start**.

When ScanDisk is finished, the **ScanDisk Results** dialog displays information about errors on the partition (if any were found) and other disk statistics, such as total disk space, number of bytes in bad sectors, and total allocation units.


ScanDisk Results - (C:)
ScanDisk did not find any errors on this drive.
302,821,376 bytes total disk space
0 bytes in bad sectors
438,272 bytes in 101 folders
5,029,888 bytes in 63 hidden files
279,445,504 bytes in 1,733 user files
17,907,712 bytes available on disk
4,096 bytes in each allocation unit
73,931 total allocation units on disk
4,372 available allocation units
Close

For more information about MS ScanDisk, consult Windows Help.

CHAPTER 4

Completing Advanced Disk Operations

This chapter includes the following information:

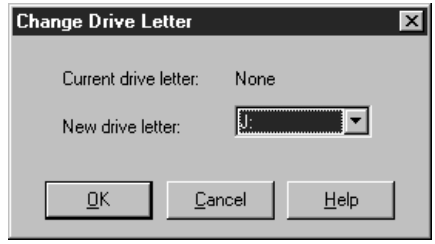
- Changing a Drive Letter
- Retesting Bad Sectors
- Hiding and Unhiding Partitions
- Resizing the Root Directory
- Setting an Active Partition
- Resizing Clusters

Changing a Drive Letter

The Change Drive Letter operation lets you change the drive letter assigned to any partition visible to and supported by Windows NT/2000/XP. If you are running Windows 9x or Windows Me, this operation is not available.

1. Select the partition whose drive letter you want to change.
2. Click **Operations ➤ Advanced ➤ Change Drive Letter**.

The **Change Drive Letter** dialog appears.



3 In the **New drive letter** box, type or select the drive letter you want to assign to the partition.

4 Click **OK**.

Retesting Bad Sectors

The Bad Sector Retest operation lets you check sectors on FAT or FAT32 partitions that have been marked bad and recover sectors that are usable.

The FAT and FAT32 file systems allocate disk space for file storage in units called clusters, which are composed of a fixed number of sectors. Because theFAT orFAT32 file system tracks bad sectors at the cluster level, it marks an entire cluster bad even though the problem may exist in a single sector. Use **Info** to discover whether a partition contains bad clusters. For more information, see “Getting Information About Partitions” on page 55.

As a conservative measure, when you move or resize a partition or increase cluster size, PartitionMagic marks all new clusters containing any part of old bad clusters as bad (even though the clusters may not actually contain bad sectors). Likewise, when you decrease a partition’s cluster size, PartitionMagic divides bad clusters into multiple bad clusters. If, after you complete these tasks, PartitionMagic reports bad sectors, you can perform a bad sector retest and reclaim the good sectors that were marked bad.

1 Select the partition you want to retest.

2 Click **Operations ➤ Advanced ➤ Bad Sector Retest**.

The **Bad Sector Retest** dialog appears to explain that PartitionMagic will retest sectors that are marked bad and reclaim them if they do not include bad sectors.

3 To continue with the test, click **OK**.

Some sectors marked as bad are "marginally bad," meaning that one time the sector works fine and another time it does not. Bad Sector Retest may mark a marginally bad sector as good. This can result in data loss if the marginally bad sector fails in the future. Most modern hard drives detect bad sectors and automatically remap the sector, so in general, you do not see bad sectors on modern hard drives. If you do get bad sector errors on a modern hard drive, it is recommended that you replace the drive.

Hiding and Unhiding Partitions

The Hide Partition operation lets you secure partitions against unwanted user access. You can perform this operation on FAT, FAT32, and NTFS partitions.

When you hide a partition, it will not be assigned a drive letter the next time you boot your computer.

1. Select the partition you wish to hide.

   If Remote Agent is running, you can hide or unhide a partition on a remote machine.

2. Click **Operations ➤ Advanced ➤ Hide Partition** (or **Unhide Partition**).

   Unless you are running Windows NT/2000/XP, unhiding multiple primary partitions may cause your machine to be unbootable.

   The **Hide Partition** dialog appears, warning you that drive letters may change.

3. To confirm that you want to hide the partition, click **OK**.

Under Windows 9x and Windows Me, hiding and unhiding partitions can cause the drive letters of other partitions to change. When this happens, your computer may not boot and applications may not run. PowerQuest recommends that you allow DriveMapper to run automatically to update drive letter references that change as a result of hiding or unhiding partitions.

If your hard disk has more than one primary partition, only one is visible by default. When you use the Set Active operation, PartitionMagic unhides the selected primary partition and hides other primary partitions. While you can unhide more than one primary partition, we recommend that you do not.

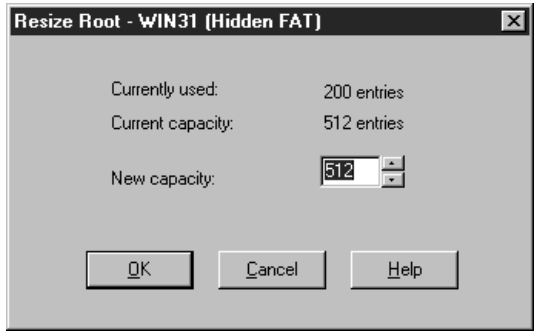
If you are running Windows NT/2000/XP, partitions are not hidden automatically; therefore, you can have multiple visible primary partitions.

Resizing the Root Directory

The Resize Root operation lets you change the maximum number of entries that can be placed in the root directory of a FAT partition. The number of root entries is set at the time the partition is formatted; the limit does not expand automatically as it does in a subdirectory or in a FAT32 partition. Consider increasing this number if you use Microsoft long filenames in the root directory. During this operation, data within the partition is unaffected.

1. Select the partition whose root directory you want to resize.
2. Click **Operations ➤ Advanced ➤ Resize Root**.

   The **Resize Root** dialog appears, displaying the number of used entries and the current capacity.



3. In the **New capacity** box, type or select the number of entries you want the root directory to have.

   The number you type will be rounded to one that preserves the current cluster alignment.
4. Click **OK**.

Occasionally, enlarging the root directory displaces the first few files on the partition (such as IO.SYS and MSDOS.SYS if the partition contains an operating system). If the root directory is on a boot partition and the partition fails to boot after resizing the root directory, you should run SYS.COM to move the displaced files back to the front of the disk.

Setting an Active Partition

The Set Active operation lets you make a partition the active partition (the partition the computer boots from). PowerQuest provides multiple ways to set a partition active: PartitionMagic (Windows version or rescue disk version), BootMagic, and PQBoot. This section explains changing the active partition from within PartitionMagic.

Only one partition on a hard disk can be active at a time. To boot your computer from a partition, the partition must be on the first disk, and it must contain an operating system. When your computer boots, it reads the partition table of the first disk to find out which partition is active and boots from that partition.

IMPORTANT! Before you make a partition active, it must be bootable. If the partition is not bootable or if you are not certain if it is, have a boot diskette ready.

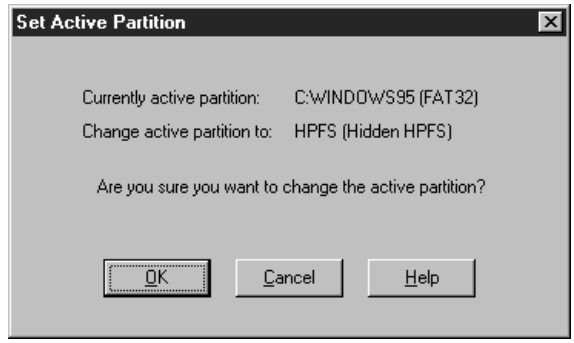
If you plan to install an operating system to a partition, the partition must be active.

PartitionMagic hides any other FAT, FAT32, and NTFS primary partitions (unlike Windows 9x and DOS FDISK programs which cannot hide or unhide partitions). Hiding the other primary partitions makes it easy to install multiple operating systems and choose the one you want to set active. For example, if you have Windows 95 and want to install Windows NT in a separate partition, you can make the Windows 95 partition smaller, create another primary partition, set it as the active partition, and then boot from the Windows NT installation diskettes.

1. Select the partition you want to make active.
2. Click **Operations ➤ Advanced ➤ Set Active** on the context menu.

   (Windows NT/2000/XP only) In a configuration with mixed IDE and SCSI hard disks, Windows does not always see the boot drive as the first disk. PartitionMagic displays drives in the order that Windows reports them. As a result, you may see your boot device as drive 1, 2, and so forth. PartitionMagic may also incorrectly report that there is no active partition. Be sure you identify which drive is the boot drive.

The **Set Active Partition** dialog appears.


Set Active Partition
Currently active partition: C:\WINDOWS95 (FAT32)
Change active partition to: HPFS (Hidden HPFS)
Are you sure you want to change the active partition?
OK
Cancel
Help

3 Click **OK**.

Resizing Clusters

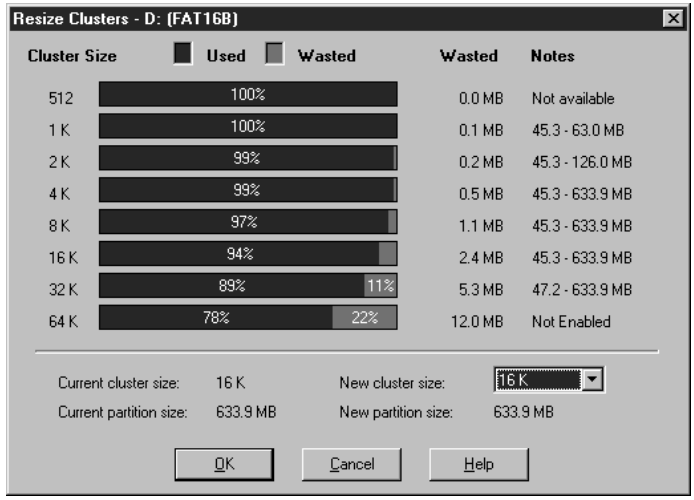
The Resize Clusters operation lets you change the cluster size on FAT and FAT32 partitions. Reducing cluster size may help you reclaim wasted space on your hard disk.

All files on FAT and FAT32 partitions are stored in allocation units called clusters. Each file on a partition is allotted at least one cluster. The size of a partition determines cluster size. Unless the size of a file is an exact multiple of cluster size on the partition where the file is located, the file includes wasted space. Larger partitions have larger clusters, and, therefore, more wasted space. For more information, see "Making Efficient Use of Disk Space" in Help.

1 Select the partition where you want to resize clusters.

2 Click **Operations ➤ Advanced ➤ Resize Clusters**.

The **Resize Clusters** dialog appears.



For each cluster size, PartitionMagic displays the following:

- A bar graph and percentages represent how much space would be used and how much space would be wasted if you chose that cluster size for the currently selected partition
- Wasted space (in megabytes)
- The range of allowable partition sizes (in megabytes) or other information
- If a cluster size requires a partition that is too small for the data and files on the partition, “Not Available” appears in the **Notes** column. “Not Enabled” appears in the **Notes** column for the 64 K cluster size because it is only used for Windows NT/2000/XP. You can enable the 64 K cluster size, but it is not recommended. For more information, see “Allow 64K FAT Clusters for Windows NT/Windows 2000/XP” on page 23.

The lower portion of the **Resize Clusters** dialog displays information about the current and new cluster size and the current and new partition size (based on the new cluster size).

3 Using the information in the dialog, decide which cluster size you want to use (and can use) and select it from the **New cluster size** drop-down list.

PartitionMagic adheres to the established limits for partition and cluster sizes. You cannot select a cluster size that is invalid for the selected partition.

It is not recommended that you use the smallest cluster size on partitions containing a single, large file, such as a database or swap file.

Choosing a smaller cluster size may resize the partition smaller, creating unallocated space next to the partition. You can use this unallocated space by creating a new partition.

WARNING! Do not choose the 64 K cluster size unless you have Windows NT or Windows 2000 and a 2–4 GB disk.

WARNING! FAT16 partitions are resized automatically to fit the cluster size.

4 Click **OK**.

Default Cluster Sizes

A partition's cluster size is set by the DOS FORMAT operation, based on the size of the partition, as shown in the following tables.

DOS and Windows default FAT cluster sizes

Partition Size (MB)	FAT Type	Sectors Per Cluster	Cluster Size
0-15	12-bit	8	512 bytes
16-127	16-bit	4	2 K
128-255	16-bit	8	4 K
256-511	16-bit	16	8 K
512-1,023	16-bit	32	16 K
1,024-2,047	16-bit	64	32 K
2,048-4,096	16-bit	128	64 K*

*Only available with Windows NT and Windows 2000 and a 2–4 GB disk.

Windows 95 OSR2, Windows 98, Windows Me, and Windows 2000 default FAT32 cluster sizes

Partition Size (GB)	Sectors Per Cluster	Cluster Size
0.256- 8.01	8	4 K
8.02-16.02	16	8 K

Windows 95 OSR2, Windows 98, Windows Me, and Windows 2000 default FAT32 cluster sizes

Partition Size (GB)	Sectors Per Cluster	Cluster Size
16.03-32.04	32	16 K
> 32.04	64	32 K

CHAPTER 5

Converting Partitions

This chapter includes the following information:

- Procedure for Converting Partitions
- Converting FAT Partitions to FAT32
- Converting FAT Partitions to NTFS (Windows NT/2000/XP only)
- Converting FAT32 Partitions to FAT
- Converting FAT32 Partitions to NTFS (Windows 2000/XP only)
- Converting FAT/FAT32 Partitions to 4K Aligned
- Converting NTFS Partitions to FAT or FAT32
- Converting Partitions to Logical or Primary

Procedure for Converting Partitions

You can convert the following file system formats:

- FAT partitions to FAT32
- FAT partitions to NTFS (Windows NT/2000/XP only)
- FAT32 partitions to FAT
- FAT32 partitions to NTFS (Windows 2000/XP only)
- FAT/FAT32 partitions to 4K aligned
- NTFS partitions to FAT
- NTFS partitions to FAT32

You can also convert primary partitions to logical and logical partitions to primary.

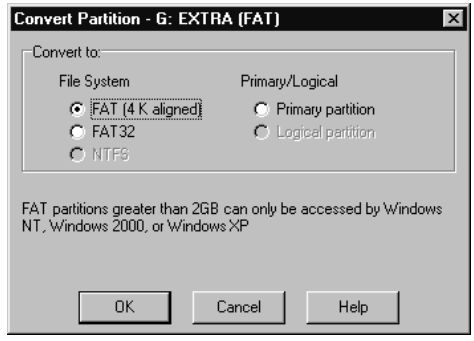
IMPORTANT! You cannot convert FAT or FAT32 partitions to NTFS if you are running PartitionMagic from the rescue disks.

IMPORTANT! You cannot convert file system types on compressed drives. First, uncompress the drive, then run the conversion.

The basic conversion steps (1-5) are found below. However, for each file system type there is specific information you need to know before beginning any conversion. Please see the appropriate heading listed in this section before completing the conversion procedure.

1. Select the partition you want to convert.
2. Click **Operations ➤ Convert**.

   The **Convert Partition** dialog appears.



3. Under **Convert to**, choose the file system to which you want to convert the partition.

   Depending on the file system format of the partition you are converting, some options may appear dimmed.

   If you want to convert your partition to primary or logical, see "Converting Partitions to Logical or Primary" on page 78.
4. Click **OK**.

Converting FAT Partitions to FAT32

FAT32 partitions have less wasted disk space than FAT partitions. (For more information, see "Resizing Clusters" on page 66.) However, you should be aware of these issues:

- You must have Windows 95 OEM Service Release 2, Windows 98, or Windows 2000 to access files on a FAT32 partition. If you run an operating system other than these, FAT32 partitions will be inaccessible when the other operating system is running, even if one of these operating systems is installed on your machine.
- Some computers have a sleep mode that saves all memory to disk. Because this function sometimes requires a FAT partition, consult your computer manual or contact the manufacturer before converting to FAT32.
- The minimum recommended size for a FAT32 partition is 256 MB.

The steps for this process are listed on page 72.

Converting FAT Partitions to NTFS (Windows NT/2000/XP only)

The Convert FAT to NTFS operation launches the Microsoft Convert utility to convert a FAT partition to NTFS. You must be running Windows NT/2000/XP to complete this conversion. This cannot be performed from the rescue diskette.

If you boot multiple OSs, you must be careful converting FAT to NTFS. NTFS is only accessible from Windows NT/2000/XP; therefore, the data in this partition will not be accessible if you boot DOS, Windows 9x, or Windows Me.

After clicking **OK**, if you have no operations pending and if Windows NT can lock the partition (no open files), the FAT file system is converted. If you have operations pending, you must apply them first before converting from FAT to NTFS. If you do not apply the operations, a prompt appears asking if you want to apply the changes now before converting your FAT file. Click **OK** to apply the changes and continue with the conversion.

If you have any open files, a message appears indicating that the convert utility cannot gain exclusive access to the drive and asks if you want to perform the conversion immediately. If you type Y, your computer is shut down, and the conversion is done at reboot time.

Converting FAT32 Partitions to FAT

To complete this conversion, the partition must have at least 300-400 MB of unused space because of how the FAT file system allocates disk space for file storage. The partition must have approximately 1.7 GB of data or less because FAT partitions are limited to 2 GB. If the command is dimmed in the dialog, you must delete some data to enable the conversion.

If the FAT menu option is dimmed, your FAT32 partition contains over 2 GB of data. If the partition size is over 2 GB but it contains less than 2 GB of data, you can convert the partition (without data loss), but the new partition will be 2039 MB.

During the conversion, PartitionMagic may report too many root directory entries (the maximum number of entries in a FAT partition's root directory is limited, unlike a FAT32 partition's root directory). In this case, move or copy some of the files in the root directory to another location and then start the conversion again.

Converting FAT32 Partitions to NTFS (Windows 2000/XP only)

The Convert FAT32 to NTFS operation launches the Microsoft Convert utility to convert a FAT32 partition to NTFS. You must be running Windows 2000/XP to complete this conversion.

Be aware that data in an NTFS partition will not be accessible if you boot DOS, Windows 9x, or Windows Me.

The steps for this process are listed on page 72.

After clicking **OK**, if you have no operations pending and if Windows 2000/XP can lock the partition (no open files), the FAT32 partition is converted. If you have operations pending, you must apply them first before converting from FAT32 to NTFS. If you do not apply the operations, a prompt appears asking if you want to apply the changes now before converting your FAT partition. Click **OK** to apply the changes and continue with the conversion.

If you have any open files, a message appears indicating that the convert utility cannot gain exclusive access to the drive and asks if you want to perform the conversion immediately. If you type `Y`, your computer is shut down, and the conversion is done at reboot time.

Converting FAT/FAT32 Partitions to 4K Aligned

Unlike an NTFS partition, the first cluster in a FAT or FAT32 partition is not located at the beginning of the partition. Instead, all the FAT clusters come after a group of sectors that are designated as a system area. Because the number of sectors needed for this system area varies, the first cluster may not be aligned on any particular boundary.

During a convert operation from FAT or FAT32 to NTFS, all the sectors in the system area must be converted to clusters. The cluster size of the resulting NTFS partition is dependent on how many sectors are in the system area. If the number of sectors in the system area is a multiple of eight, then the NTFS cluster size can be up to 4K in size (8 sectors x 512 bytes per sector equals 4K). If the number of sectors is not a multiple of eight, then a smaller cluster size must be used when converting to NTFS.

When you convert a FAT or FAT32 partition to 4K aligned, the operation will check the number of sectors in the system area to see if it is a multiple of eight. If it is not, it will adjust the value by padding the number of sectors in the system area and shifting all the data clusters accordingly. This will ensure that if you decide to convert the partition to NTFS at a later time, it is possible to have 4K clusters on the resulting partition.

Converting NTFS Partitions to FAT or FAT32

Converting an NTFS partition to FAT lets you view the contents of the partition from DOS, or Windows 9x/Me/NT/2000/XP.

Converting an NTFS partition to FAT32 lets you view the contents of the partition from Windows 95b/98/Me/2000/XP. However, a FAT32 partition will not be accessible to Windows 95a and Windows NT.

IMPORTANT! You will lose file system-specific information when converting from NTFS to FAT. Refer to "NTFS Information Lost When Converting to FAT or FAT32" on page 76 for additional information.

If the conversion fails when you apply changes, refer to the bulleted list on page 75 for a list of possible reasons.

Restrictions on Converting NTFS Partitions to FAT or FAT32

NTFS is a more advanced file system than FAT and FAT32. Therefore, depending on the NTFS features used on the partition, the type of data, and partition size, you may or may not be allowed to complete the conversion.

If you receive an error message and the conversion stops, it is usually caused by one or more of the following:

- The file system for conversion is not allowed for the current partition size. A FAT32 partition should be greater than 256 MB, and a FAT partition must be less than 2 GB.
- The NTFS partition has data in memory that has not yet been written to the hard disk.
- ·The Windows 2000/XP NTFS partition has compressed files, sparse files, reparse points, or encrypted files. In such case, you can uncompress and/or move (or delete) the sparse files, then repeat the conversion.
- The file system has errors, such as lost clusters and cross-linked files. You can fix these problems, then try the conversion again.
- There is not enough temporary space in the partition to do the conversion. The conversion will require the NTFS system and the FAT32 system files until the last step of the conversion. Also, there is data in NTFS File Replication Services that must be moved to external clusters and saved.

NTFS Information Lost When Converting to FAT or FAT32

If you can complete the conversion from NTFS to FAT or FAT32, you may receive a warning about the quality of data and feature loss, depending on the features used on the partition, the type of data, and the partition size.

Warning	Description
Error	The conversion is not allowed. Because the partition being converted is using advanced features in NTFS, you may experience unintended data and feature loss. You will receive an error in one or more of the following cases: • There is more than one data stream for any file. • Any links. • Any extended attributes. • Any user-defined attributes in any file. • Device entries. • There are sparse files on the volume. Any sparse files, except for the bad sector file, will stop the conversion.

Warning	Description
Warning	The conversion is allowed. Although a conversion warning is not as serious as an error, you may still experience the loss of NTFS-specific features that are not supported in FAT or FAT32. You will receive a conversion warning in one or more of the following cases: • Disk usage quotas - NTFS supports limiting the amount of disk space for a user. After conversion, all users will have full access to all free hard disk space. • Access control lists - This is a file attribute that lists all the users that can access a file. After conversion, all users will have full access to all files. • Index of access control lists - A list of all files that have specific access rights assigned to them. After conversion, all users will have full access to all files. • FAST index file - This file is sometimes created on Windows 2000 computers. After conversion, all indexing of keywords will be lost. • Old versions of files - NTFS has the ability to keep versions of files, however, only the current version of the file is converted and saved.
No Warning	The conversion is allowed. The most basic NTFS partition still gives files more features than are found in FAT or FAT32. When Windows NT 4.0 is used to copy files from an NTFS partition to a FAT partition, no warning is given about the features you are losing. Also, the conversion will not give you a warning about specific features that cannot be converted. These features include: • Standard journal file (only used internally by NTFS) - This file is a transaction log of changes to the NTFS file system. After conversion, the journal file will be lost. • NTFS-specific file attributes - NTFS and FAT both have standard file attributes, such as Read-only, Archive, Hidden, and System. NTFS has additional file attributes that can be set. After conversion, however, these additional file attributes will be lost.

Warning	Description
	• NTFS-specific file dates - The last edit date is converted to the FAT date. After conversion, the creation date, last access date, and last edit date (date change only) will be lost. • Reliable change journal - This journal file is new to Windows 2000. After conversion, this file will be lost.

Converting Partitions to Logical or Primary

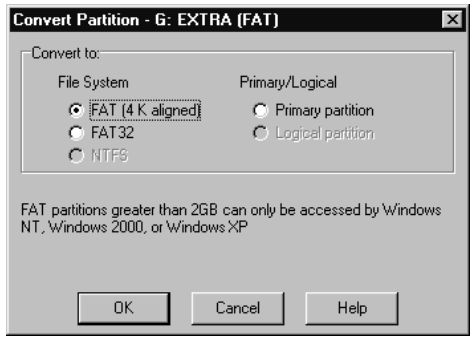
You might want to convert a primary partition to a logical partition if you have reached the limit of primary partitions on your hard disk. If you create a logical partition, PartitionMagic will automatically place it in an extended partition. You can then create more logical partitions within that extended partition, expanding the maximum number of partitions on the disk.

You might want to convert a logical partition to a primary partition if you plan to install an operating system on it. The partition must be a primary partition to be bootable.

IMPORTANT! If you convert a primary active partition to logical (such as your Windows NT/2000 system partition), your computer will not boot from the hard drive.

1. From the **Disk** drop down list (located on the toolbar), select the disk containing the partition you wish to convert.
2. On the disk map, partition list, or tree view, select the partition you want to convert.
3. On the toolbar **Operations ➤ Convert**.

The **Convert Partition** dialog appears.



4. Click either **Primary** or **Logical**.
5. Click **OK**.

You cannot convert from primary to logical if another primary partition exists between the chosen partition and an existing logical partition.

You cannot convert from logical to primary if the conversion would result in more than four primary partitions or the partition has one or more logical partitions to the left and one or more logical partitions to the right.

CHAPTER 6

Using Wizards

This chapter includes the following information:

- Overview
- Running Wizards
- Create New Partition Wizard
- Resize Partitions Wizard
- Redistribute Free Space Wizard
- Merge Partitions Wizard
- Copy Partition Wizard

Overview

PartitionMagic includes five wizards for common tasks. The wizards provide an alternative to performing the tasks manually using the commands on the **Operations** menu.

Running Wizards

There are two ways to run a wizard:

- Click **Wizards** on the menu bar, then click the wizard you want to run.
- Click the appropriate wizard icon in the PartitionMagic main window. (If the wizard icons are not visible in the main window, click **View ➤ Wizard Buttons**.)

Applying Changes

When you complete a wizard, the disk map and partition list in the main window reflect the changes you entered. However, the changes do not actually affect your system until you apply them.

You can apply (or discard) changes that you enter using wizards in three ways:

- Click on the toolbar to apply the changes, or click he toolbar to undo the changes and start over.
- Click **General ➤ Apply Changes** (or **Discard All Changes** or **Undo Last Change**).
- Click the **Apply Changes** or **Undo Last** icon at the bottom of the main window. (If the icons are not visible at the bottom of the main window, click **View ➤ Wizard Buttons**.)

After running a wizard, you can run other wizards or perform other partition operations and then apply or discard all the pending changes at once.

Hiding Wizard Icons

You can show or hide the wizard buttons near the bottom of the PartitionMagic main window. Hiding the wizard buttons increases the display area of the partition list.

1 Click **View ➤ Wizard Buttons**.

The setting you choose will remain in effect until you reset it.

Create New Partition Wizard

The **Create new partition** wizard creates a new primary or logical partition.

You should be aware of the following considerations when creating a new partition:

- Creating a new partition may cause your drive letters to change. For example, if you have one primary partition (C:) on your hard drive and a CD-ROM drive (D:), and you create a new logical partition on your hard drive, the new partition becomes D: and the CD-ROM drive changes to E: after you reboot your computer. As a result, any programs on your hard drive that were linked to the CD-ROM may no longer function because the paths to files have changed. (In such cases, you can run DriveMapper to correct the error.)

- The file system you choose for the new partition will affect which operating systems can access the partition. The wizard dialogs will instruct you about the choices you make. For example, if you choose to create a FAT32 partition, the wizard will inform you that FAT32 partitions are used by Windows 95 OEM Service Release 2, Windows 98, Windows Me, and Windows 2000 but that Windows 3.x and DOS cannot access them. Pay close attention to the information in the dialog boxes, or you may inadvertently make your data inaccessible.
- Before installing Windows NT, make sure that all the partitions that you want Windows NT to recognize end prior to cylinder 1024. Otherwise, Windows NT will not install and will report that all the partitions are corrupted. If you cannot resize and move all partitions, you must obtain updated drivers from Microsoft (see Article ID: Q197667 on the Microsoft web site) before installing Windows NT.
- After you apply the changes from the wizard and reboot your computer, the operating system assigns the new partition a drive letter. You can then save data or install an operating system to your new partition.

If you created a new primary partition and plan to install an operating system on it, refer to "Installing a New Operating System" on page 38 for additional information.

Resize Partitions Wizard

The Resize Partitions wizard helps you resize a partition and lets you specify how the resize will affect other partitions on the same disk. For example, if you have C: and D: partitions and you choose to enlarge C:, the wizard could take space from D: and allocate it to C:.

For information about resizing partitions without the wizard, see "Resizing and Moving Partitions" on page 28.

Redistribute Free Space Wizard

The Redistribute free space wizard spreads the free space on a hard disk evenly across partitions. Free space refers to unused space within partitions and space that is not allocated to any partition.

You can redistribute free space on one hard disk at a time.You cannot redistribute free space across several disks.

For information about redistributing free space without the wizard, see “Resizing and Moving Partitions” on page 28.

Merge Partitions Wizard

The Merge Partitions wizard helps you merge two adjacent FAT, FAT32, or NTFS partitions. You choose two partitions, and one will be expanded to include the second. The contents of the second partition are added as a folder inside the first partition.

PowerQuest recommends that you run DriveMapper to update drive letter references after merging partitions. The wizard will prompt you to run DriveMapper automatically.

Copy Partition Wizard

The Copy Partition wizard helps you duplicate a partition. The copy is the same size and file type and contains the same data as the original. When you copy a partition, you specify the hard disk and the unallocated space where you want to place the copy. If necessary, the wizard will resize neighboring partitions to create sufficient space to perform the copy.

CHAPTER 7

PartitionMagic Pro Features

This chapter includes information about features that are available only with PartitionMagic Pro:

- Remote Agent
- Scripting
- Command Line Switches

Remote Agent

IMPORTANT! Remote Agent is only available with PartitionMagic Pro. You cannot perform across the wire functions with the retail version of PartitionMagic.

Remote Agent (RA) is a DOS application that is executed on a machine that PartitionMagic can contact across the wire using a TCP/IP connection. Using Remote Agent, you can:

- Copy or move partitions between the remote machine running the Remote Agent boot disk and the Windows machine running PartitionMagic
- Delete a remote partition
- Create a remote partition
- Check the integrity of a remote partition

You cannot use Remote Agent to copy or move partitions from one hard disk on a remote machine to a second hard disk on the same machine because doing so would cause too much network traffic.

Three-Step Process

Using the **Connect Remote Agent** command on the **General** menu involves three steps:

1. Create the remote agent boot disks using the Boot Disk Builder program. See "Creating Remote Agent Boot Disks" on page 86.

   You will use the disks to boot the remote machine, so the computer running PartitionMagic can communicate with the remote machine.

2. Boot the remote machine using the Remote Agent boot disks you created in step 1. See "Using the Remote Agent Boot Disk" on page 91.

3. Access the remote machine (using the **Connect Remote Agent** option) from the machine running PartitionMagic. See "Accessing a Remote Machine" on page 92.

You are ready to perform operations between the Windows machine and the remote machine. Partitions on the remote drive will appear in the tree view on the left side of the main window and in the partition list, so you can choose them like you would any local partition.

Creating Remote Agent Boot Disks

You must create Remote Agent boot disks to run Remote Agent. You can create the disks with Boot Disk Builder or with a DOS batch file.

Boot Disk Builder

Boot Disk Builder helps you build a boot disk to run Remote Agent. Boot Disk Builder is installed when you install PartitionMagic Pro. If you have the retail version of PartitionMagic, Remote Agent is not available.

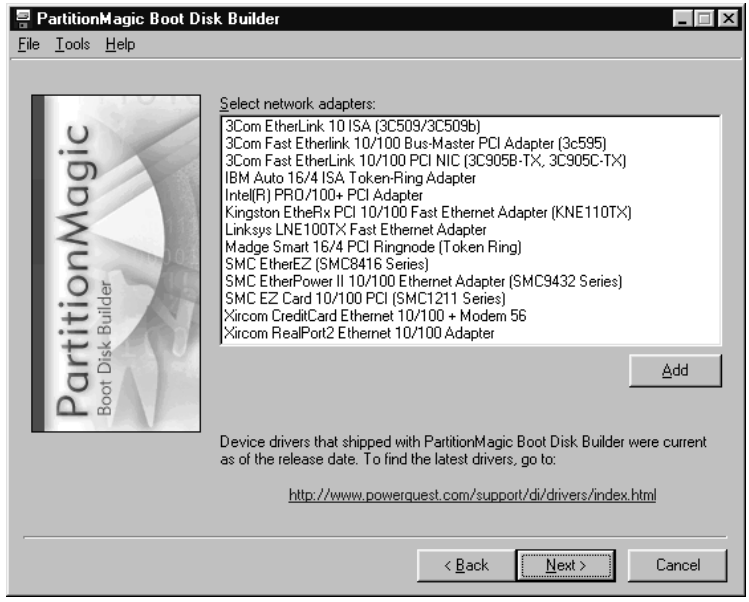
1 From the Windows taskbar, click **Start ➤ Program Files ➤ PowerQuest PartitionMagic Pro 7.0 ➤ Boot Disk Builder**.

PartitionMagic Boot Disk Builder
File Tools Help
This wizard helps you build PowerQuest boot disks.
Click Next to create Remote Agent boot disks.
PartitionMagic
Boot Disk Builder
< Back
Next >
Exit

2 From the Boot Disk Builder window, click **Next**.

To use a configuration file that you have created and saved previously, click **File ➤ Load Configuration** from the main Boot Disk Builder screen, choose the configuration file (*.BDC) you want, then click **Open**.

3 If your network adapter is listed, go to step 7. If your network adapter is not listed, click **Add**. Specify the location of the driver information file (*.INF) for your network adapter, click **Next**, then continue with step 4.


PartitionMagic Boot Disk Builder
File Tools Help
PartitionMagic
Boot Disk Builder
Select network adapters:
3Com EtherLink 10 ISA (3C509/3C509b)
3Com Fast Etherlink 10/100 Bus-Master PCI Adapter (3c595)
3Com Fast EtherLink 10/100 PCI NIC (3C905B-TX, 3C905C-TX)
IBM Auto 16/4 ISA Token-Ring Adapter
Intel(R) PRO/100+ PCI Adapter
Kingston EtheRx PCI 10/100 Fast Ethernet Adapter (KNE110TX)
Linksys LNE100TX Fast Ethernet Adapter
Madge Smart 16/4 PCI Ringnode (Token Ring)
SMC EtherEZ (SMC8416 Series)
SMC EtherPower II 10/100 Ethernet Adapter (SMC9432 Series)
SMC EZ Card 10/100 PCI (SMC1211 Series)
Xircom CreditCard Ethernet 10/100 + Modem 56
Xircom RealPort2 Ethernet 10/100 Adapter
Add
Device drivers that shipped with PartitionMagic Boot Disk Builder were current as of the release date. To find the latest drivers, go to:
http://www.powerquest.com/support/di/drivers/index.html
< Back
Next >
Cancel

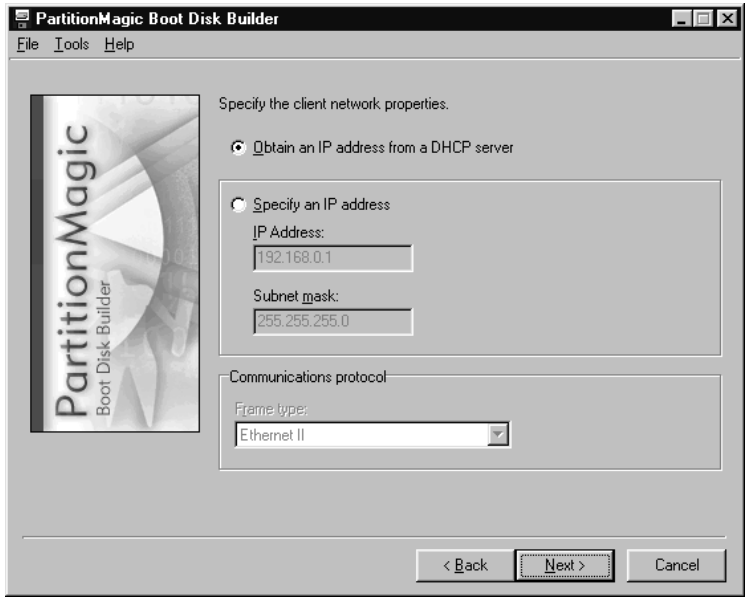
4 Choose one or more network adapters from the list, then click **Next**.

5 Specify the Novell NetWare DOS client driver file, then click Next.

6 Click **Finish**.

7 Select the network adapter you are using from the list box.

8 Click **Next**.

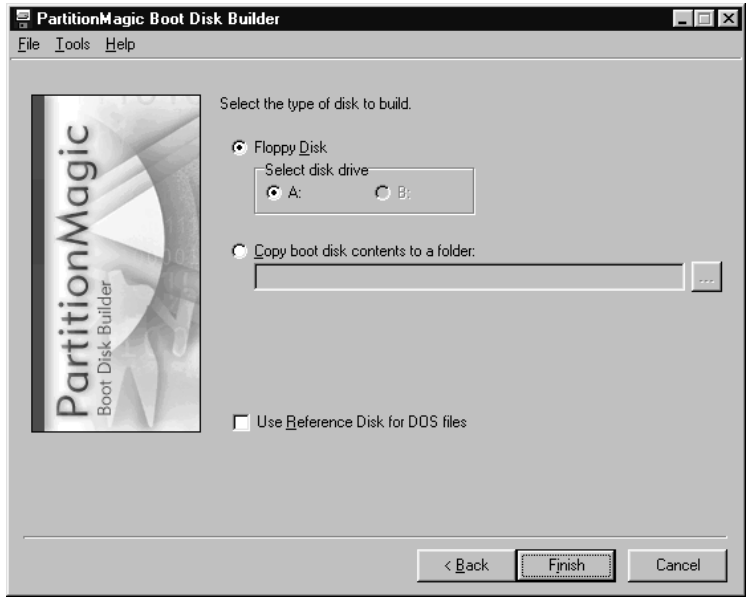


9 Click **Obtain an IP address from a DHCP server** if a DHCP server is used (the net mask and default gateway are automatically provided).

If there is no DHCP server, specify the IP address and subnet mask.

Ethernet II will display as the frame type for your network.

10 Click **Next**.



11 Click the drive letter where you are creating the DOS boot diskette, or click **Copy boot disk contents to a folder** and specify the full path to the folder you want.

12 Insert a formatted diskette.

If you have a boot disk and you want to use your regular DOS files instead of the Caldera DOS files included with Boot Disk Builder, complete the following items:

a. Insert your boot disk, then click **Tools ➤ Load DOS Reference Diskette ➤ From A:.** The files from your boot disk will be copied to a REFDISK directory where Boot Disk Builder is installed. If there are too many to include along with the necessary files that Remote Agent needs, you can delete everything but CONFIG.SYS and any drivers started within the CONFIG.SYS file.

b. Select **Use Reference Disk for DOS Files** at the bottom of the dialog.

c. Remove your original boot disk and insert a formatted disk that will become the Remote Agent boot disk. (If you do not remove your original disk, Boot Disk Builder will overwrite the files on it.)

13 If you want to save your choices for later use, click **File ➤ Save Configuration**, then name and save the file.

14 Click **Back** to make any changes, or click **Finish** to build the boot disk.

Depending on the network interface card selected, the network and Remote Agent files may require two diskettes. You will be prompted if a second diskette is needed.

After the boot disk has been created, you can create another boot disk.

When you use the boot disk, Remote Agent will start, and you can specify the IP address settings. You can then perform operations "across the wire."

Boot Disk Files

The Remote Agent boot disk will contain the following files:

- NIC driver
- AUTOEXEC.BAT
- COMMAND.COM
- CONFIG.SYS
- HIMEM.SYS
- IBMBIO.COM
- KICKNIC.COM
- LSL.COM
- MOUSE.COM
- MOUSE.INI
- NET.CFG
- PING.EXE
- RA.EXE
- RAHELP.TXT
- WATTCP.CFG

If the remote machine has a bootable partition, you can copy the files from the boot disk to that partition and run the Remote Agent from the hard disk, under DOS.

Using the Remote Agent Boot Disk

1 Insert the RA boot disk into the floppy drive of the remote machine, and boot the machine.

The **Remote Agent** dialog appears. Notice that it is waiting for a connection from PartitionMagic on the Windows machine.

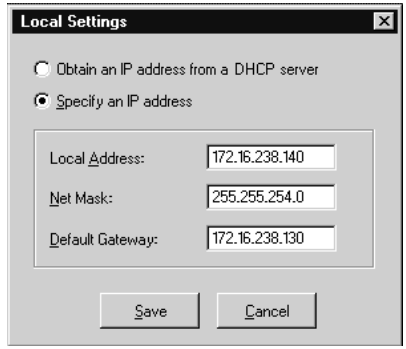
Specifying the IP Address of the Remote machine

The first time you run RA on the remote machine, you may need to specify network configuration settings.

1 From the **Remote Agent** dialog, click **Settings**.

2 Click **Obtain an IP address from a DHCP server** if a DHCP server is used.

Or, click **Specify an IP address**, then enter a static local address, net mask, and default gateway.



3 Click **Save**.

The information you specify in the **Local Settings** dialog is saved in the WATTCP.CFG file on the boot disk.

Notice that the Remote Agent is now ready and waiting for a connection from PartitionMagic Pro on a Windows machine. After a connection is established, you can send operations (such as copying a partition) from the Windows machine to the remote machine.

Accessing a Remote Machine

After you have booted the remote machine using the Remote Agent boot disk, you are ready to access the remote machine from PartitionMagic Pro on the Windows machine.

1 From the Windows machine, run PartitionMagic Pro.

2 Click **General ➤ Connect Remote Agent**, or click on the toolbar.

3 Type the local IP address of the machine running the Remote Agent.

4 Click **Connect**.

5 Choose the operations you want to perform on the remote machine.

Operations that are not available are dimmed on the menu.

Scripting

You can use PowerQuest PartitionMagic Pro scripts to make changes to the partitions and volumes on a machine. A script is an ASCII text file with text statements that define the operations you want to perform. You can create a script file with ScriptBuilder or with any text editor.

For additional information about script processing, refer to the PartitionMagic Pro online help or the PMSCRIPT.PDF file in the English\Docs folder on the PartitionMagic Pro CD.

Running a Script from the Rescue Disks

If you have PartitionMagic Pro, you can modify the rescue disks to run PartitionMagic with a script file automatically.

1. Open the AUTOEXEC.BAT file on **PartitionMagic 7.0 Disk 1**.
2. Edit the line that includes PQMAGIC as follows, where SCRIPT.TXT is the name of the script file you want to execute:

   ```
   PQMAGIC /CMD=SCRIPT.TXT
   ```

   IMPORTANT! Do not include a hard return at the end of the line that includes the PQMAGIC command. Do not make any other modifications to the AUTOEXEC.BAT file.
3. Save the AUTOEXEC.BAT file.
4. Copy the AUTOEXEC.BAT file to **PartitionMagic 7.0 Disk 2**.

   The file must be identical on both disks, or PartitionMagic will not function properly.

   When you boot from the first disk, PartitionMagic will execute the script file you specified. For additional information about scripting, refer to PartitionMagic help.

Command Line Switches

PartitionMagic Pro includes the command line switches documented here in addition to the command line switches included with the retail version of PartitionMagic.

For a list of switches that are supported with both the retail and Pro versions of PartitionMagic, see “Command Line Switches” on page 8.

The following command line options are supported by the Windows version and the DOS (rescue disk) version of PartitionMagic Pro, unless noted otherwise. When you specify multiple options, the order is unimportant.

Switch	Description
/CMD	This is the parameter that will be used to pass the name of the script file to the program. For example, `PQMAGIC /CMD=script.txt` would start PartitionMagic and run a script called script.txt.
/ERR	***IMPORTANT!*** The /ERR parameter is only available in the rescue disk version of PartitionMagic Pro (PQMAGIC.EXE). The error parameter is used to specify a file to be created if the program should terminate with an error. Because many operations require the machine to be rebooted following script execution, it is not always possible to display error messages within PartitionMagic. If you use the /ERR switch and the program ends in an error, the error number will be placed in the file designated by /ERR. If /ERR is specified and PartitionMagic terminates WITHOUT an error, the error file specified will be deleted if it exists. Using this parameter, you can write a program to check for the existence of the error file and determine if the script was run successfully. If you do not use the /ERR switch but you do use the /LOG switch, any errors encountered will appear in the log file along with a text description of the error that occurred. To use the error parameter with the above parameters, the syntax would be: `PQMAGIC /CMD=SCRIPT.TXT /LOG=RESULTS.FIL /ERR=ERROR.FIL`

Switch	Description
/LOG	Whenever the program is run from a script, it is suggested that a log of all that occurred should be kept. The /LOG parameter is most useful when used with the /CMD parameter to review exactly what happened during the script execution. The /LOG parameter will specify the name of a file where all output will be directed. The output will appear as if a user had been executing the program through keyboard input, displaying each script command and all that happened because of that command. To specify a log named RESULTS.FIL, the command line would be: `PQMAGIC /CMD=SCRIPT.TXT /LOG=RESULTS.FIL` ***IMPORTANT!*** Do not attempt to modify the partition on which the log file is created. The log file is created on the partition that PQMAGIC is run from. If you need to modify this partition, do not use the /LOG switch. **Doing so will damage your partition.**
/NRF	The No Run File parameter is used to specify the name of a file, which if it exists, will prevent the script from executing. This parameter is used to keep the program from running a second time, if it were placed in a login script or autoexec.bat file. If you had specified a /LOG file or a /ERR file, the /NRF parameter could check for the existence of these files and prevent the program from running if either existed. For example, if a script were run with the parameters specified above (in the /ERR option), using the syntax shown below would prevent the program from running if the RESULT.FIL existed because the program had been run once already. You can use the /NRF parameter more than once on the command line if it makes sense to check for more than one file. `PQMAGIC /CMD=SCRIPT.TXT /LOG=RESULTS.FIL /ERR=ERROR.FIL /NRF=RESULTS.FIL`

Switch	Description
/SCO	The Syntax Check Only parameter is used to check the syntax of a script. It will make sure that a partition is always selected before an operation is executed and check the syntax of all the script commands. It will also check to ensure that any volume labels specified in a select partition statement are unique. It will not actually run the script. The syntax check will not detect logical errors such as trying to move the partition when there is not space to move. This parameter can be used with the /LOG file if desired. A successful syntax check will show a statement saying that it was successful. Usage for the /SCO parameter would be as follows: `PQMAGIC /CMD=SCRIPT.TXT /SCO`

CHAPTER 8

Using PartitionMagic Utilities

This chapter includes the following information:

- Changing Drive Letter References with DriveMapper
- Changing Bootable Partitions with PQBoot

Changing Drive Letter References with DriveMapper

When you create, merge, delete, hide, and unhide partitions, your drive letters can change, causing applications not to run because application shortcuts, initialization files, and registry entries refer to incorrect drives. DriveMapper is a wizard that lets you easily update drive letter references.

IMPORTANT! DriveMapper does not change drive letter assignments; it only changes references to the drive letters, which are assigned by your operating system.

DriveMapper will run automatically if the following conditions are all met:

- You apply changes to your system that affect drive letter assignments.
- You are running Windows 95 or Windows 98.
- Your hard disk contains only FAT or FAT32 partitions.
- You have no more than one CD-ROM drive and no more than one removable drive.

To run DriveMapper manually,

1. From the PartitionMagic main window, click **Tools ➤ DriveMapper**.

   You can also click **Start** (on the Windows taskbar) ➤ **Programs ➤ PowerQuest PartitionMagic ➤ DriveMapper**.

If you are using Windows NT or Windows 2000/XP Professional as your only operating system, we recommend using the **Change Drive Letter** operation rather than DriveMapper. **Change Drive Letter** lets you permanently set the drive letters for your partitions so that adding and removing partitions does not affect drive letters. Note that if you merge or split partitions, drive letters will change even if you are using Windows NT/2000/XP and the Change Drive Letter operation.

If you have installed an alternative desktop on Windows 3.11 or Windows 95/98 with the desktop files residing on a different drive than the Windows system files, DriveMapper may not be able to adjust your paths. Because DriveMapper is a Windows program, it must have Windows loaded to run. If the drive letter has been changed for the drive that holds your desktop files, you may not be able to start Windows.

For further information about how operating systems assign drive letters, see the second paragraph under “Assigning a CD-ROM Drive Letter” on page 122.

Using DriveMapper With Multiple Operating Systems

If you run multiple operating systems, you should reinstall applications rather than use DriveMapper. The following issues make using DriveMapper in a multiple operating system environment difficult and error-prone:

- Drive letter assignments are based on the file systems supported by an operating system. If you do not put all FAT32 and NTFS partitions after all FAT partitions, drive letters will change depending on the operating system currently running, and DriveMapper may be unable to correctly identify which changes should be made.
- Registry settings are changed for the current operating system only. If you manually run DriveMapper from another operating system, references in files will already be changed in the current operating system and further changes will introduce errors in the other operating systems.
- When DriveMapper is running, files contained in hidden partitions are not updated. If you are using multiple primary partitions for different operating systems, only the active primary partition may be visible to be updated.

Changing Drive Letters in the Correct Order

DriveMapper must change drive letters in the correct order to avoid destroying original references before they are used to make changes for other drive letters.

For example, assume you have two partitions on your hard disk (a primary partition C: and a logical partition D:) and a CD-ROM drive E:. Suppose you create a logical partition between C: and D:. The drive letter of D: changes to E:, and the drive letter of E: changes to F:; however, references in certain files (such as shortcuts) still reflect the original drive letter assignments. DriveMapper must first change the drive E: references to F: and then change the drive D: references to E:.

DriveMapper will automatically place changes in the proper order. PowerQuest strongly recommends that you apply changes in the order DriveMapper chooses.

Changing Bootable Partitions with PQBoot

PQBoot is a quick and easy way to switch between bootable primary partitions. PQBoot is for users who only occasionally change the active partition and do not want to use BootMagic. For more information about BootMagic, see “Using BootMagic” on page 103.

1. *(Windows 95/98/Me, Windows NT workstation, or Windows 2000/XP Professional)* Click **Start ➤ Programs ➤ PowerQuest PartitionMagic 7.0 ➤ PQBoot**. Under Windows 95/98/Me, PQBoot32 will only run if PQVXD.VXD is in the same directory as PQBOOT32.EXE.

   (DOS) Go to a DOS prompt. Change to the directory containing PQBOOT.EXE or PQBOOTX.EXE, type `PQBOOT` or `PQBOOTX`, then press **<Enter>**.

   Use PQBOOT if you want a small, fast executable that will fit on a floppy disk that has limited free space. Be aware, however, that PQBOOT may not display volume labels correctly for FAT or FAT32 partitions and volume labels for NTFS partitions will not display at all.

   Use PQBOOTX if the executable file size and speed are not critical. PQBOOTX will display all volume labels in FAT, FAT32, and NTFS partitions.

2. If you are using Windows, a message appears indicating that PQBoot runs in MS-DOS mode and that all other programs will close if you continue. To continue, click **Yes**.

   PQBoot displays a list of all primary partitions.

3. Type the ID number of the partition (shown in the first column) you want to make the bootable primary partition.

   Check the **Status** column to see if a partition is bootable.

4. Press <Enter>.

   PQBoot makes the partition active and reboots the computer. If you need to maintain multiple, visible primary partitions under Windows NT, you should run PQBoot with the /M switch.

PQBoot Command Line Switches

PQBoot offers several command line switches that are useful when you know the ID number or volume name of the partition you want to make active. To use a switch, run PQBoot from a DOS prompt. Supported switches include:

- **/A** marks a partition active without rebooting.
- **/M** maintains the hidden/visible status of each partition. If you have a Windows NT installation that looks for multiple, visible primary partitions, you should run PQBoot with the /M switch.
- **/P:<*number*>** selects the active partition using the partition's ID number.
- **/S** shows partition information, including ID numbers and volume names.

- **/V:*<label>*** selects the active partition using the partition's volume label.
- **/?** displays a brief description of the switches and examples of how to use them.

For example, to set the second available bootable partition active without rebooting, you would type `PQBOOTX /P:2 /A`.

Running PQBoot with Command Line Switches

1. Go to a DOS prompt.
2. Change to the directory containing PQBoot (typically C:\PROGRAM FILES\POWERQUEST\PARTITIONMAGIC\UTILITY\DOS).
3. *(DOS)* Type `PQBOOT switch` or `PQBOOTX switch` (where `switch` is the appropriate switch).

   (Windows 95 or later) Type `PQBOOT32 switch`.

CHAPTER 9

Using BootMagic

This chapter includes the following information:

- Getting Started
- Configuring BootMagic
- Setting BootMagic Passwords
- Adding an Operating System to the BootMagic Menu
- Removing an Item from the BootMagic Menu
- Modifying a Menu Item's Properties
- Setting a Default Operating System
- Booting an Operating System on a Second Hard Disk
- Setting the Startup Delay
- Disabling BootMagic
- Using the BootMagic Menu
- Other BootMagic Options

Getting Started

PowerQuest's BootMagic is a powerful disk-management tool that helps you run multiple operating systems on a single PC. Each time you start or restart your computer, BootMagic presents a list of operating systems (OSs) you can boot from. The configuration program lets you quickly select the OSs you want to appear in the **BootMagic Menu** and lets you set various boot-time options such as a default OS and a startup delay.

With BootMagic, you can easily switch between OSs, using whichever OS best suits your immediate needs. You can even try out a new OS risk-free, knowing that your old OS is there, readily accessible when you need it.

BootMagic System Requirements

The following table lists the minimum and recommended system requirements for installing and using BootMagic.

Hardware/Software	Minimum	Recommended
Processor	Intel/486SX	486 or above
RAM	4 MB (Windows 9x and Windows NT/2000 require additional memory)	16 MB or more
Hard-disk free space	10 MB	10 MB
CD-ROM drive	Any speed	Any speed
3.5-inch diskette drive	3.5-inch diskette drive	3.5-inch diskette drive
Operating system	Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, Windows XP, DOS 5.0 or later	Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, Windows XP, DOS 5.0 or later
Monitor	VGA	Super-VGA
Pointing Device	None	Microsoft mouse (or compatible pointing device)

Supported Operating Systems

BootMagic supports the following operating systems:

- Windows 98
- Windows 95
- Windows Me
- Windows NT 4.0
- Windows NT 3.51
- Windows 3.x (must be installed with DOS 5 or later)
- MS-DOS 5.0 or later
- Windows 2000
- Windows XP
- PC-DOS 6.1 or later
- Open DOS
- Linux
- BeOS
- Most other versions of DOS
- Some other PC-compatible OSs

Installing BootMagic

You can install BootMagic from Windows 95, Windows 98, Windows Me, Windows NT 3.51 or 4.0, Windows 2000 Professional, Windows XP, and DOS 5.0 or later.

IMPORTANT! BootMagic must be installed to a FAT or FAT32 primary partition on the first hard disk. You must also boot from your first hard disk when installing BootMagic, or it will not work properly.

1. Insert the PartitionMagic CD in your CD-ROM drive.

   In Windows 95, Windows 98, Windows Me, Windows NT 4.0, Windows 2000, or Windows XP, the setup program automatically starts when you insert the CD into the CD-ROM drive.

2. If you are installing from the PartitionMagic CD, click **Install** from the PartitionMagic setup screen, then click BootMagic to launch the BootMagic install program.

   If you are using DOS, type *drive*`:\ENGLISH\BTMAGIC\DOS\INSTALL.EXE` (where *drive* is the drive letter of your CD-ROM drive).

3. Follow the on-screen instructions to install BootMagic.

After installation, BootMagic sorts through your system's hard disks, looking at the partition tables and gathering information about each currently-installed operating system. BootMagic then automatically runs the configuration program, adding every detected OS to the **BootMagic Menu**.

At this point, it may be necessary for you to edit the items that appear in the menu list. While BootMagic reliably detects most OSs, it may also detect some non-OS partitions. For example, if you have a primary NTFS data partition (that is, a partition which contains only data, no OS) on the first disk, BootMagic may detect it as Windows NT. Likewise, a primary FAT16 or FAT32 data partition may be detected as MS-DOS or Windows 95/98. Because data partitions cannot be booted, you should remove them from the menu list. You can also choose to add or remove other OS selections, modify OS names and icons for easier identification, add passwords, set a new startup delay, or select a different default OS.

For information on detecting non-OS partitions in the menu list, see "Finding the Right Operating System" in BootMagic's online Help. For more information on using the configuration program, see "Configuring BootMagic" on page 107 in this guide or refer to online Help.

After you make any necessary changes, click **Save/Exit**. The next time you reboot your computer the **BootMagic Menu** appears. To start an OS, simply select the desired menu item from the **BootMagic Menu**.

Creating a BootMagic Rescue Disk

During installation, you have the option to create a BootMagic rescue diskette. (DOS users should run *drive*:\BTMAGIC.PQ\MKRESCUE.BAT after the BootMagic DOS install to create the rescue diskettes.) This diskette is vital if your system's master boot record (MBR) is ever damaged or overwritten. It can also be helpful if you inadvertently disable BootMagic and cannot access the configuration program to re-enable it.

WARNING! Technical support may not be able to assist you if you have not created a rescue disk.

To launch BootMagic's configuration program from the rescue diskette, boot from the rescue diskette and follow the on-screen instructions.

Once in the configuration program, you can make any needed modifications or additions. When you click **Save/Exit** to exit the configuration program, BootMagic re-saves all the necessary files and rewrites the MBR, thereby restoring the program to normal.

Getting Help

If you need more information than this chapter provides, you can refer to the BootMagic online Help.

- To access Help in the Windows configuration program, select **Help ➤ Contents** from the menu bar.

- To access Help in the DOS configuration program, select **Help ➤ Topic List** from the menu bar.
- To access context-sensitive Help, click **Help** in the lower-right corner of most dialogs, or press <F1>.

If you need further assistance, you can contact PowerQuest Technical Support. See "Contact Information" on page 150.

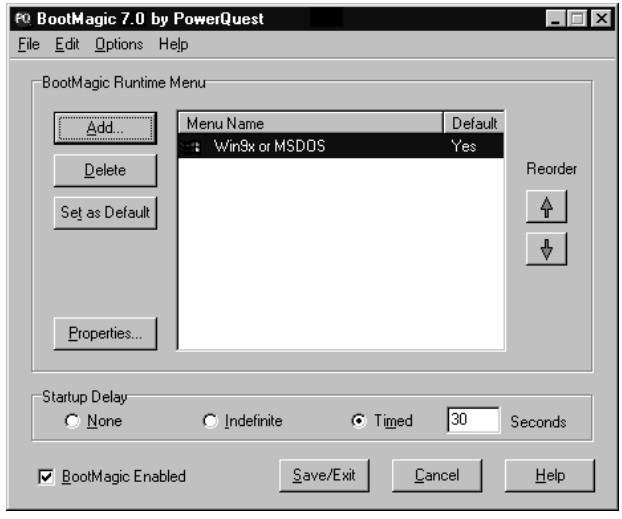
Configuring BootMagic

BootMagic's configuration program consists of two versions, one for DOS and one for Windows 95/98 and Windows NT Workstation. Both versions have similar interfaces and offer the same functionality.

BootMagic's configuration program may be manually launched by any of the following:

- In Windows, select **Start ➤ Programs ➤ PowerQuest BootMagic ➤ BootMagic Configuration**.
- In DOS, run *drive*:\BTMAGIC.PQ\CONFIG.BAT.
- On the PartitionMagic main screen, click **Tools ➤ BootMagic Configuration**.

When you run the configuration program, the BootMagic main window appears.



From this window, you can set a password for the configuration program, the BootMagic Menu or specific menu items; add or remove an OS to the BootMagic Menu; modify an operating system's BootMagic properties; set your default operating system; set the startup delay; or disable BootMagic. Each of these options are briefly covered in this chapter. For further information about configuring BootMagic or for details for each step outlined below, please refer to BootMagic's online help.

Setting BootMagic Passwords

BootMagic now allows users to password protect the BootMagic configuration program, the **BootMagic Menu**, or even specific menu items.

To set a password for the configuration program or the **BootMagic Menu**, follow these steps:

1. In th**e BootMagic main w**indow, click the **Options** menu.
2. Select **Set Configuration Password** to password protect the configuration program or **Set Boot-time Password** to password protect the BootMagic menu.
3. Enter the current password in the **Old password** text box.

   The **Old Password** text box will be blank and disabled when there is no prior password.
4. Enter the new password in the **New password** text box.
5. Retype the new password in the **Confirm new password** text box.
6. Click **OK**.

To clear a password, enter the old password and leave the new password fields blank.

To set a password for specific **BootMagic Menu** items, you must modify the menu item's properties. For more information, see "Modifying a Menu Item's Properties" on page 110 or refer to BootMagic's online Help.

Adding an Operating System to the BootMagic Menu

1. In the BootMagic main window, click **Add**.

   The **BootMagic Add OS** dialog appears.

2 *(Optional)* To view all your system's partitions, including those that BootMagic does not recognize as containing an OS (for example, Linux on a logical partition), mark the **Advanced** check box.

3 Select the OS you wish to add to the BootMagic menu.

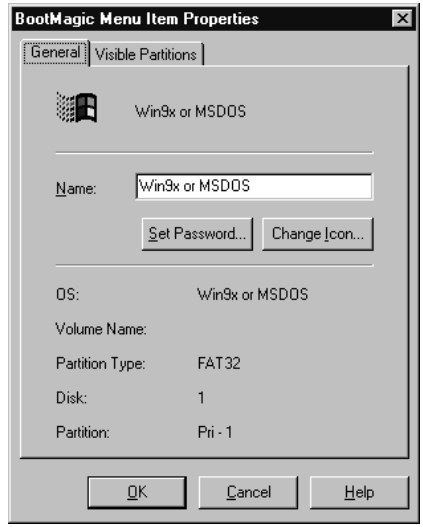
BootMagic may sometimes detect an OS that doesn't exist or may detect the wrong name for an existing OS. For help on finding the operating system and partition you want, see "Finding the Right Operating System" in BootMagic's online Help.

WARNING! Do not add non-OS partitions to the BootMagic menu. You cannot boot your computer from a partition without an OS. If you add a partition that doesn't have an OS and try to boot, you will be left with a black screen.

In this event, soft boot your computer (press **Ctrl-Alt-Delete),** boot DOS or Windows from the BootMagic menu, run the BootMagic configuration program, and remove the non-OS menu item from the BootMagic menu.

4 Click **OK**.

The **BootMagic Menu Item Properties** dialog appears.



5 Define the menu properties as desired, and then click **OK**.

For more information on defining runtime menu properties, see “BootMagic Menu Item Properties” in BootMagic’s online help.

Removing an Item from the BootMagic Menu

1. In the BootMagic main window, select the item you wish to delete from the **BootMagic Runtime Menu** list.
2. Click **Delete**.

   Deleting an OS from the BootMagic menu does not remove the OS from your system. The OS remains in its partition and can be added again to the menu if desired.

Modifying a Menu Item’s Properties

1. In the BootMagic main window, select the item you wish to modify.
2. Click **Properties**.
3. Modify the properties as desired, then click **OK**.

   For a description of each property, see “BootMagic Menu Item Properties” in BootMagic’s online help.

Setting a Default Operating System

BootMagic automatically selects the OS on the home partition (that is, the partition on which BootMagic is installed) as the system default. This is the OS that BootMagic automatically boots if another OS is not chosen before the startup delay expires, or if the startup delay is set to **None**.

For more information on the startup delay, see the next section, “Setting the Startup Delay.”

1. In the BootMagic main window, select the operating system you wish to set as the system default.
2. Click **Set as Default**.

Booting an Operating System on a Second Hard Disk

To boot an operating system that is not on the first hard drive, you must enable advanced partition hiding. To enable advanced partition hiding, click **Options ➤ Advanced Partition Hiding**. If this option is not selected (the default), you can only boot from the first hard disk.

Setting the Startup Delay

By default, BootMagic uses a Timed startup delay set to 30 seconds. You can change the startup delay.

- Select **None** to eliminate any time delay. BootMagic automatically boots the default OS at startup without displaying the **BootMagic Menu**.
- Select **Indefinite** to specify an unlimited time delay. BootMagic displays the runtime menu until you choose the OS you wish to boot.
- Select **Timed** to designate a time delay from 1- 99 seconds. BootMagic waits the specified amount of time for an OS to be chosen before booting the default OS.

If you set the startup delay to either **None** or **Timed**, you must also ensure that a valid OS item is selected as the system default. Without a default OS, BootMagic cannot boot your system.

If you set the startup delay to **None** and select a default OS that cannot run the BootMagic configuration program, you will be unable to modify the configuration settings and boot other OSs. If this happens, boot your computer while holding down the left **Shift** key. This overrides the timer settings and opens the **BootMagic Menu** without a timer (as the **Indefinite** option) for that one boot.

You can then select DOS or Windows from the BootMagic menu, run the BootMagic configuration program, and change either the default OS or the startup delay.

Disabling BootMagic

You may encounter situations in which you want to disable BootMagic. For example, if you are diagnosing an OS startup problem and need to reboot your system multiple times or, if you are installing another operating system, you may want to bypass loading BootMagic every time. Disabling BootMagic replaces the BootMagic master boot record (MBR) with a copy of your original MBR.

Disabling BootMagic does not destroy any of your configuration settings. All of the current settings are saved until BootMagic is re-enabled.

1. Unmark the **BootMagic Enabled** check box in the BootMagic main window.

   The configuration options become unavailable, and BootMagic remains disabled until the box is re-checked.

2. Click **Save/Exit** to save your changes and exit the configuration program.

   When you reboot your computer, BootMagic no longer loads and the default OS is automatically booted.

To re-enable BootMagic, run the configuration program from either your hard drive or the BootMagic rescue diskette. Mark the **BootMagic enabled** check box in the BootMagic main window. When BootMagic is re-enabled, it saves a copy of the current MBR and then reinstalls the BootMagic MBR. Upon reboot, BootMagic loads normally and all the previous configuration settings are restored.

For more information on creating a BootMagic rescue disk, see "Creating a BootMagic Rescue Disk" on page 106.

Using the BootMagic Menu

Once installed, the BootMagic menu appears each time you start your computer. The BootMagic menu displays all the OSs configured for booting. Each OS is identified by its user-assigned name and icon. Although BootMagic automatically highlights the default OS, you can choose any of the listed OSs. Simply click the OS you want to boot.You can also use your arrow keys to select an OS and press **<Enter>**.

If the OS you want is not listed, you can run the BootMagic configuration program and add it to the menu. For more information on adding an OS to the menu list, see "Adding an Operating System to the BootMagic Menu" on page 108.

Other BootMagic Options

In addition to making it easy to choose from multiple operating systems when you boot your machine, BootMagic makes installing multiple OSs on your system easy. For information on installing to primary or logical partitions, see "Using BootMagic to Install a New Operation System" in BootMagic's online help.You may also want to refer to the help topic on OS-specific installation issues.

Another BootMagic feature is the option to change the BootMagic background screen to a customized, Windows format bitmap. Refer to the BootMagic online help for comprehensive information about all BootMagic features that are not discussed in this chapter.

APPENDIX A

Using PartitionMagic With Other Programs

This appendix includes the following information:

- Norton Utilities
- Disk Compression Utilities
- Operating System Boot Utilities
- Virus Protection Software
- Drive Overlay Programs
- SoundBlaster
- GoBack

Norton Utilities

You can safely use PartitionMagic and Norton products together. The following information will help you avoid any problems.

Norton Disk Doctor

If an extended partition ends at the end of a drive, Norton Disk Doctor (NDD) will sometimes display this message: “An extended partition has invalid parameters and probably is inaccessible. Correct this situation if you are unable to access partitions on

hard disk 1. Do you wish to correct this problem?" To eliminate this message, use PartitionMagic to resize the logical and extended partitions at the end of the drive to leave some free space before the end of the drive.

Additionally, when you delete, move, or resize partitions, it appears to NDD that you could have inadvertently deleted a partition. NDD displays the following message: "If you are unable to access a disk that you previously could, you should revive this partition. Would you like to revive this partition?" If you inadvertently deleted a partition, select **Yes**. If you do not want this message to appear every time you run NDD, complete the following:

1. Click **No**.

   NDD displays this message: "You have chosen not to revive the partition. Do you want Norton Disk Doctor to mark the partition so it doesn't ask about it again?"

2. Click **Yes**.

   The **Create Undo File** dialog appears.

3. Click **Skip Undo File**. (Creating an undo file uses many diskettes.)

   NDD displays this message: "If you wish to undelete this partition at a later time, use the /UNDELETE switch."

4. Click **OK**.

   NDD displays this message: "Partition information has been changed. Would you like to restart your computer?"

5. Click **Restart Your Computer**.

Norton AntiVirus

Because Norton AntiVirus (NAV) interprets changes to partition tables and boot records as potential virus attacks, PartitionMagic takes steps so that NAV automatically reinoculates. Should NAV give you the choice of repairing the changes, *do not* select **Repair**. Instead, inoculate after using PartitionMagic.

Norton SystemWorks

You can use PartitionMagic on a system where Norton SystemWorks is installed. However, you must run PartitionMagic from the rescue disks. If you attempt to run PartitionMagic under Windows with Norton SystemWorks installed, you may receive a disk-write error.

Disk Compression Utilities

You can safely use PartitionMagic and some disk compression utilities together. The following information will help you avoid any problems.

WARNING! Do not merge compressed partitions. You will lose the host partition.

DriveSpace and DriveSpace 3

To use PartitionMagic with DriveSpace, you must first change the size of a DriveSpace or DriveSpace 3 drive in Windows 95 or Windows 98 by completing the following:

1. On the Windows desktop, double-click **My Computer**.
2. Right-click the drive you want to change, then click **Properties** on the menu.
3. Click the **Compression** tab.
4. From the **Compression** menu, click **Advanced**.
5. From the **Advanced Properties** menu, click **Run DriveSpace**.

   A list of your physical drives, compressed drives, and host drives appears.
6. Select the compressed volume you want to change.
7. Click **Drive** at the top of the menu.
8. From the **Drive** menu, click **Adjust Free Space**.

   The **Adjust Free Space** menu appears. At the bottom of the menu is a slide bar.
9. To increase compressed space (enlarge the compressed volume), move the slide bar to the left. To increase uncompressed space (shrink the compressed volume), move the slide bar to the right.

   If you want to shrink the host for a compressed drive, move the bar to the right to create more uncompressed space on the host. You can then use PartitionMagic's Resize/Move operation to make the host partition smaller. If you have already used Resize/Move to resize the partition larger and want to add more space to the compressed volume, move the slide bar to the left.

Operating System Boot Utilities

Both OS/2's Dual Boot and System Commander 2.0 and above accommodate boot sector changes made by PartitionMagic. To install System Commander on drives that PartitionMagic has modified, you may need to use System Commander 2.06 or later.

If you have System Commander on your computer, you must configure it so that it does not simultaneously unhide multiple primary partitions. To configure System Commander so that it does not create multiple visible primary partitions, complete these steps for each operating system selection on the System Commander menu:

1. On the **Operating System Selection** menu, select an operating system.
2. Press **<Alt+S>**.
3. Click **Local Special Options ➤ Primary partitions accessible on drive 0**.

   A screen appears with three options: **All**, **Auto** (the default), and **None**.
4. Click **None**.

   The other primary partitions will now be hidden when this operating system boots.
5. Repeat steps 1-4 for all operating system selections on the menu.

Virus Protection Software

PartitionMagic modifies the master boot record and partitions' boot sectors. Virus protection software should be able to detect that PartitionMagic is changing partition tables and not boot code; however, it is possible that unsophisticated virus protection programs may mistake PartitionMagic changes as attempts to install a virus. If this occurs, turn off the virus protection program while using PartitionMagic and inform the virus protection software manufacturer of the problem.

Some motherboards contain virus protection software within the BIOS. If this causes a problem when you are running PartitionMagic, disable the BIOS virus protection, and then restart PartitionMagic.

Drive Overlay Programs

Drive overlays, such as Ontrack DDO, Microhouse EZ-Drive or Pro-Drive, Maxblast, WD DDO, and Seagate DDO, provide your computer with access to larger disk drives. PartitionMagic is compatible with these programs only if the drive overlay program is loaded before PartitionMagic.

If you boot your computer from a diskette, the overlay will not load, and PartitionMagic will not get the correct information from your drive. You can boot from a diskette and still load the drive overlay by completing the following:

1. Start your computer as if you were going to boot from the hard disk.
2. When prompted, press **<Space>** or **<Ctrl>**.
3. The drive overlay information appears with an option of booting from a diskette. Select this option and insert the boot diskette when prompted.

SoundBlaster

The DOS drivers for a SoundBlaster Live sound card may conflict with PartitionMagic operations that require going into boot-mode. PowerQuest recommends that you unload the SoundBlaster drivers (by remarking them in your CONFIG.SYS and AUTOEXEC.BAT files) until after you have finished using PartitionMagic.

GoBack

If you need to modify partitions on a hard disk that is being monitored by Roxio's GoBack software, you must first disable (turn off) GoBack.

1. From GoBack's main menu, click **Options ➤ Disable GoBack**.

Before you begin modifying partitions on your hard disk, you must first reboot your computer, then start PartitionMagic. When you are finished making your changes in PartitionMagic, you can re-enable GoBack.

For system recovery software that is completely compatible with all of PowerQuest's partition management utilities, you should use PowerQuest SecondChance software.

APPENDIX B

Troubleshooting

This appendix includes the following information:

- General Troubleshooting
  - *Freeing Memory to Run PartitionMagic under DOS*
  - *Assigning a CD-ROM Drive Letter*
  - *Using PartitionMagic With a SCSI Hard Disk*
  - *PqRP Partitions*
  - *Resolving Check Errors*
  - *Resolving Partition Table Errors*
  - *Partition Tables and Viruses*
  - *Partition Will Not Boot After Resizing*
- Generating Diagnostic Reports with PartitionInfo
- Error Messages and Solutions

General Troubleshooting

Freeing Memory to Run PartitionMagic under DOS

The DOS PartitionMagic executable requires a minimum of 585 KB of memory in the first 640 K of the computer's address space (conventional memory). If you do not have sufficient conventional memory, there are several ways you can free additional memory.

Running MEMMAKER

MEMMAKER is a program that automatically configures your computer to save conventional memory (while still loading all of the device drivers and other programs you usually load when booting DOS). MEMMAKER frees conventional memory by moving as many programs as possible out of conventional memory into high memory. Run MEMMAKER by typing MEMMAKER at a DOS prompt. Follow the on-screen instructions.

MEMMAKER is only available in DOS 5.0 to 6.22. It is not available in Windows 95 or Windows 98 DOS mode.

Using the F8 Key to Keep Programs From Loading

Press <F8> immediately after booting your computer (while DOS is booting). As DOS reads the each command in the CONFIG.SYS and AUTOEXEC.BAT files, it asks if you want the command executed. When you see commands that load device drivers or TSR programs not needed to run PartitionMagic, press <N> so that the software is not loaded into memory.

Deleting Operating System Compression Files

If you use DOS 6.22, Windows 95, or Windows 98 and your system does not have any compressed drives (using programs such as DriveSpace, DoubleSpace, and Stacker), you can delete the operating system compression files, DRVSPACE.BIN or DBLSPACE.BIN, from any boot diskette you create. This frees conventional memory because DOS 6.22, Windows 95, and Windows 98 load these files into memory, regardless of the contents of CONFIG.SYS and AUTOEXEC.BAT.

DRVSPACE.BIN and DBLSPACE.BIN are hidden system files. To delete them, complete the following:

1. Place your boot diskette in your diskette drive.

1. Go to a DOS prompt.
2. Type **A:** and press **<Enter>**. You should see **A:\>** on your screen.
3. Type `ATTRIB -R -H -S *.BIN`, and press **<Enter>**.
4. Type `DEL *.BIN` and press **<Enter>**.

Assigning a CD-ROM Drive Letter

If your computer has a CD-ROM drive or any form of removable media, you should be aware of potential problems caused by the way drive letters are assigned to these devices.

Under Windows NT, you can change drive letter assignments with PartitionMagic; otherwise, this is a function of the operating system. The operating system assigns drive letters in this order: (1) the first recognized primary partition on each hard disk, (2) all logical partitions on each hard disk, (3) any other primary partitions on each hard disk, and (4) the CD-ROM drive and any other forms of removable media.

Generally, all removable media should be assigned drive letters after fixed disks.

Because the CD-ROM is one of the last drives to receive a letter, any partition you create or delete on any of your hard disks affects the drive letter assignment of your CD-ROM drive. Occasionally, the operating system may not assign a drive letter to the CD-ROM drive. If this occurs, complete the steps outlined below.

If you are using Windows 95/98 and Windows 95/98 drivers for the CD-ROM:

1. On the toolbar, click **Start ➤ Settings ➤ Control Panel**.
2. Double-click **System**.
3. Click the **Device Manager** tab.
4. Double-click **CD-ROM**.
5. Double-click the name of your CD-ROM drive.
6. Select the **Settings** tab.
7. In the **Start drive letter** and **End drive letter** boxes, type or select **Z**. Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future do not invalidate your CD-ROM drive letter.
8. Click **OK** to close the **Settings** page.
9. Click **OK** to close the **System Properties** dialog.
10. When prompted to restart your computer, click **Yes**.

If you are using DOS or Windows 3.x or are loading your CD-ROM drivers under DOS with Windows 95/98:

1. Go to a DOS prompt.
2. Type `EDIT C:\CONFIG.SYS`.

   Your CONFIG.SYS file opens in the DOS editor program. Look for this line: LASTDRIVE=*drive* (where *drive* is any letter of the alphabet). Change *drive* to **Z**. This allows the OS to assign all drive letters through Z.

3. If your CONFIG.SYS file does not contain the LASTDRIVE=drive statement, you can add it by simply typing `LASTDRIVE=Z`.
4. Select **File ➤ Exit**.
5. When you are prompted to save the file, select **Yes**. You should be back to a C:\> prompt.
6. Type `EDIT C:\AUTOEXEC.BAT`.
7. Your AUTOEXEC.BAT file opens in the DOS editor program. Look for a line that includes the word "MSCDEX." The /L:*drive* parameter (where *drive* is the drive letter assigned to your CD-ROM before you made changes with PartitionMagic) may appear at the end of this line. Change *drive* to **Z**. Because the OS assigns all other available drive letters before assigning Z, this ensures that partition changes you make in the future do not invalidate your CD-ROM drive letter. For more information, type `HELP MSCDEX` at a DOS prompt.

   If your computer is on a network, when you log in to the network, the letter "Z" and other letters at the end of the alphabet may be assigned to network search drives. In this case, assign your CD-ROM a letter immediately preceding the last letter used by the network search drives.
8. Select **File ➤ Exit**.
9. When you are prompted to save the file, select **Yes**.
10. When you see the DOS prompt (C:>), reboot your machine.

Using PartitionMagic With a SCSI Hard Disk

To use PartitionMagic on a SCSI hard disk, you must have a SCSI controller card that supports software Interrupt 13. Most SCSI controller cards let you enable software Interrupt 13 support in the BIOS through the card. If your SCSI controller card does not, contact the manufacturer to determine if your adapter can support software Interrupt 13. As a general rule, if you are able to use FDISK to partition the disk, you will also be able to use PartitionMagic.

PqRP Partitions

If your computer fails during a PartitionMagic operation, you may see a partition that displays as PqRP or PQFLEX in the partition list in the main screen. PartitionMagic flags a partition with a PqRP file system and a PQFLEX label, so you know that the partition has been modified. You should assume that a PqRP partition is not stable. Contact PowerQuest technical support for help in recovering data from a PqRP partition.

Resolving Check Errors

PartitionMagic checks the integrity of a partition thoroughly before making changes to it. The Check for Errors and Info operations perform the same checks and display error messages when they discover problems. For more information, see “Checking Partitions for Errors” on page 49 and “Getting Information About Partitions” on page 55. These checks are similar to those made by an operating system’s CHKDSK, ScanDisk, or AUTOCHK utility.

PartitionMagic also checks a partition after modifying it. While data loss is possible, it is not typical. The problem is usually a minor file system error that CHKDSK /F /R (or ScanDisk, if you are using Windows 95/98) can correct without data loss. For more extensive errors, you may need to restore your files from a backup copy. If problems persist, report the problem to PowerQuest technical support.

If you receive a Check error message on any partition, back up your hard disk and then run your operating system’s CHKDSK program on that partition (do not use the /F switch on the initial run). If you have MS-DOS 6.x, Windows 95, or Windows 98, run ScanDisk. CHKDSK and ScanDisk generally discover the same problems as PartitionMagic (except that the DOS CHKDSK program does not detect problems in Extended Attributes).

If CHKDSK or ScanDisk does not show the same errors as the Check for Errors operation, contact PowerQuest technical support.

If CHKDSK or ScanDisk and the Check for Errors operation detect the same errors, which is usually the case, run CHKDSK with the /F switch or run ScanDisk to fix the problems. Then run CHKDSK again without the /F switch to ensure that the partition is error free. Under OS/2, perform this procedure (running CHKDSK without /F) twice.

When CHKDSK reports no errors on the partition, run the Check for Errors operation. If PartitionMagic still reports a problem, reformat the partition and restore your files from the backup copy.

Resolving Partition Table Errors

Partition table errors are errors in the 100 - 199 range. In most cases, you must resolve partition table errors by creating new, error-free partition tables. The general steps are: (1) ensure you have no viruses (see below), (2) back up the data on the affected partitions, (3) delete the partitions, (4) recreate them, and (5) restore their contents. You may need to use the FDISK program from a recent DOS version, as earlier versions may refuse to delete HPFS or hidden partitions, and the OS/2 FDISK program may recognize the partition’s corruption and refuse to modify it.

In some cases, you can resolve partition table errors manually. Run PartitionInfo to determine the errors on your partitions. PowerQuest technical support can help resolve partition table errors if you e-mail the PartitionInfo report to **help@powerquest.com**. Refer to "Generating Diagnostic Reports with PartitionInfo" on page 126 for additional information about PartitionInfo.

Partition Tables and Viruses

If partition changes made under one operating system are not reflected under another, and vice versa, a master boot record (MBR) virus may be present.

Use a virus check utility that can detect the latest viruses. If a virus is found, data loss is likely. Before removing the virus, boot each operating system and use the Check for Errors operation to evaluate the integrity of the partition. Back up the files on any partition that passes the Check for Errors operation. Then remove the virus and perform the Check for Errors operation on the partitions again. Delete and recreate any partitions that fail the check. Finally, reinstall the operating systems and restore the backup files as necessary.

Partition Will Not Boot After Resizing

Occasionally, resizing a FAT partition displaces the first few files on the partition (such as IO.SYS and MSDOS.SYS if the partition contains an operating system). If you resize a boot partition and then it fails to boot, run SYS.COM from DOS or from the PartitionMagic rescue disks.

Generating Diagnostic Reports with PartitionInfo

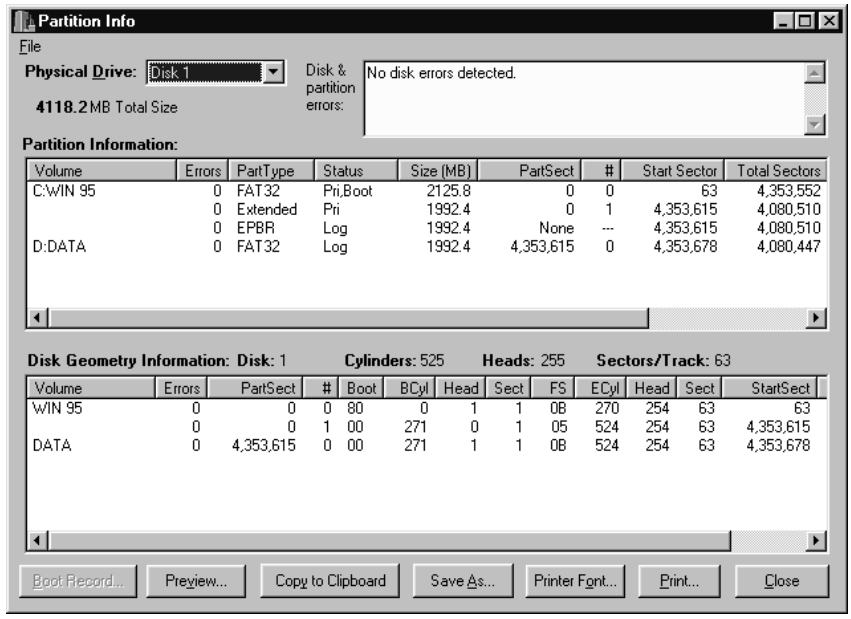
PartitionInfo generates a report showing the contents of your hard disk partition table. This information is helpful in resolving various partitioning problems.

You can run PartitionInfo under Windows 95, Windows 98, Windows Me, Windows NT 4.0 Workstation, and Windows 2000 Professional. If you are using DOS or Windows 3.x, run PARTINFO.EXE (see page 128).

Every time you run PartitionMagic, it creates a snapshot file PQ_DEBUG.TXT that includes information about all the disks and partitions on your machine. The file is saved in the Windows\System folder (for Windows 95/98) or the %system root%\system32 directory (for Windows NT/2000). The PQ_DEBUG.TXT file may be beneficial for PowerQuest technical support if you call PowerQuest for help resolving problems with PartitionMagic.

1 Click **Start ➤ Program Files ➤ PowerQuest PartitionMagic 7.0 ➤ PartitionInfo**.

The PartitionInfo window appears, displaying partition and disk geometry information and disk and partition errors. Disk geometry information includes data from the master boot record and the extended partition boot records.


Partition Info
File
Physical Drive: Disk 1
4118.2 MB Total Size
Disk & partition errors:
No disk errors detected.
Partition Information:
Volume | Errors | PartType | Status | Size (MB) | PartSect | # | Start Sector | Total Sectors
C:WIN 95 | 0 | FAT32 | Pri,Boot | 2125.8 | 0 | 0 | 63 | 4,353,552
0 | Extended | Pri | 1992.4 | 0 | 1 | 4,353,615 | 4,080,510
0 | EPBR | Log | 1992.4 | None | --- | 4,353,615 | 4,080,510
D:DATA | 0 | FAT32 | Log | 1992.4 | 4,353,615 | 0 | 4,353,678 | 4,080,447
Disk Geometry Information: Disk: 1 Cylinders: 525 Heads: 255 Sectors/Track: 63
Volume | Errors | PartSect | # | Boot | BCyl | Head | Sect | FS | ECyl | Head | Sect | StartSect
WIN 95 | 0 | 0 | 0 | 80 | 0 | 1 | 1 | 0B | 270 | 254 | 63 | 63
0 | 0 | 1 | 00 | 271 | 0 | 1 | 05 | 524 | 254 | 63 | 4,353,615
DATA | 0 | 4,353,615 | 0 | 00 | 271 | 1 | 1 | 0B | 524 | 254 | 63 | 4,353,678
Boot Record...
Preview...
Copy to Clipboard
Save As...
Printer Font...
Print...
Close

Only errors that display in the box near the top of the screen indicate problems. Do not be concerned with Warnings and Infos in the bottom two boxes.

2 From the **Physical Drive** drop-down list, select the disk for which you wish to view information.

3 You can save the PartitionInfo report as a file, or you can print it.

To do this:	Do this:
Save the report as a file	Click **Save As**. In the Filename box, type a name for the file. Click **Save**. (Columns of information are separated by tabs, so you can open the file in a word processor and easily format the report.)
To change the font for a printed report	Click **Printer Font**. Select the desired font, font style, size, and so forth. Click **OK**.

To do this:	Do this:
To change printer setup	Click **File ➤ Printer Setup**. We recommend that you set the page orientation to landscape to avoid text being cut off at the right margin.
To print a report	Click **Print**, then click **OK**.

4 To exit PartitionInfo, click **Close**.

Generating Diagnostic Reports with PARTINFO.EXE

You can also run PARTINFO.EXE from the first rescue disk to get partition information. The PARTINFO program provides essentially the same information as the PartitionInfo program but without the GUI interface.

1 Boot the computer to DOS.

2 Insert the first rescue disk.

3 You have several options for running PARTINFO.

To do this:	Do this:
To display partition information on your screen	Type `PARTINFO`, then press <Enter>.
To send a report directly to your printer	Type `PARTINFO >LPT1` or `PARTINFO >PRN`, then press <Enter>.
To save the report as a text file on a floppy disk	Type `PARTINFO >A:\PARTINFO.TXT`, then press <Enter>.

Error Messages and Solutions

PartitionMagic error messages and possible solutions are listed below by number. The messages are also grouped in number ranges by error category.

Miscellaneous Errors (3–38)

#3 Not enough memory

This error can occur when you are resizing, moving, or copying an extremely large partition (60 GB) or when manipulating smaller partitions in DOS with EMM386 loaded. EMM386 limits the amount of memory the program can access. To solve the problem, modify your CONFIG.SYS file by commenting the EMM386 line. For more information about memory requirements, see "PartitionMagic System Requirements" on page 3.

The DOS PartitionMagic executable requires a minimum of 585 KB of memory in the first 640 KB of the computer's address space (conventional memory) and 8 MB of total memory. For possible solutions if you have insufficient conventional memory, see "Freeing Memory to Run PartitionMagic under DOS" on page 121.

You may be able to resolve this problem by rebooting to an A: prompt, typing `LOCK_C:`, and running PartitionMagic from the rescue disks.

#8 Could not allocate/deallocate DOS real mode memory

The DOS PartitionMagic executable running under DOS, Windows 3.x, Windows 95, and Windows 98 requires some memory in the first 1 MB of the computer's address space (PartitionMagic uses a DOS extender). If not enough memory is available, PartitionMagic cannot access the hard disk. For possible solutions, see "Freeing Memory to Run PartitionMagic under DOS" on page 121.

#27 Cannot lock drive

Under multitasking operating systems such as Windows 95, PartitionMagic must lock a partition before it can safely modify it. If the hard disk contains files that are in use by another process, PartitionMagic cannot lock the partition.

#29 Cannot lock a locked drive

Verify that the partitions you are attempting to modify are not on a locked hard disk.

#34 The Beta version is no longer safe to use

PowerQuest occasionally releases beta versions and evaluation versions of PartitionMagic. Both versions are not as safe as release versions; therefore, PowerQuest builds an expiration date into each version. After a predetermined test period, the beta or evaluation version no longer functions.

Disk Access Errors (40–56)

Errors in the 40–56 number range indicate that accessing your disk is not possible, and often result from hardware problems. Some problems may have simple solutions; for others, the only solution may be replacing the hard disk. When possible, PartitionMagic detects major errors before any changes have been made so you can back up your data before replacing the hard disk.

#45 CRC error in data

When PartitionMagic or any other program reads information off of a hard disk, it checks the CRC (cyclic redundancy check) information contained in each sector. If it performs a CRC test and the result is different from the value stored on that sector, there is a CRC error. This usually means one of two things.

- The file being read has become corrupted by some other means.
- A sector used in the file's storage has become bad and corrupted that part of the stored file.

The solution is to do a surface test to make sure any bad sectors are marked as bad, then reinstall the software involved to ensure that files on the system are not corrupted. You may also want to try running PartitionMagic with an /IRE switch.

#48 Sector not found

This error can be reported when a given sector cannot be read or written to. There are many possible causes.

If you are encountering this error, make sure that your BIOS supports the operating system and hard disk on the system. Also run a thorough ScanDisk on the drive to prevent data from being written to bad sectors.

#49 Write fault
#50 Read fault

(The following information applies to errors 49 and 50.)

PartitionMagic is unable to write to/read from a specific sector on the hard disk. Possible causes include:

- If your PC beeps or displays a black box in the middle of the screen, virus protection is enabled in your computer's BIOS. Disable virus or boot sector protection in the BIOS.
- A virus protection application (which may be a TSR or DLL program) is in use. Disable the application before using PartitionMagic.

- There is a bad sector on the hard disk (this is usually the case only with older hard disks). Run ScanDisk on the hard disk to perform a surface scan to verify the existence of bad sectors. If your drive has bad sectors, we recommend you replace it.
- You have set up disk mirroring with PC-Tools. Disable the disk mirroring option.

Miscellaneous Errors

#70 Windows was deleted

If you are using Windows 3.x, you must create PartitionMagic rescue disks and run PartitionMagic for DOS.

#89 EZ-Drive has been detected on the drive but EZ-Drive is not running
#90 EZ-Drive has been detected on the drive but EZ-Drive is corrupt
#91 Disk Manager has been detected on the drive but is not running

These errors are "first head" errors. They can be resolved with assistance from PowerQuest technical support. Before calling technical support, please type the following at a DOS prompt: `wrprog /bak >x:head1.dat`, where *x:* is one of the drives on your machine.

The wrprog.exe file can be found in the Utility\DOS folder under your PowerQuest product folder. If you are running under Windows NT and do not have DOS available, you can use the DOS rescue diskettes you created for your PowerQuest software.

#98 Hibernate Windows 2000
#99 Hibernate Windows Me

Hibernation saves the system RAM to a file, then uses Advanced Power Management to shut the system down. When the machine is subsequently booted, the hibernation file is read into RAM, and execution begins where it left off.

A hibernated system assumes when it is booted that the system is in the same state as when hibernation occurred. Any changes made to the system's hardware (including disks and disk partitions) may cause unexpected results.

See Microsoft's Knowledge Base article #241354 for more information about making modifications to a system while in hibernation mode.

To avoid this error, shut down your machine normally and then restart.

Partition Table Errors (100–199)

Errors in the 100–199 number range are partition table errors. For general information about resolving these errors, see “Resolving Partition Table Errors” on page 125 and “Partition Tables and Viruses” on page 126.

#100 Partition table is bad

The master boot record (MBR) can contain, at most, one extended partition, and each extended partition boot record (EPBR) can contain, at most, one link to another EPBR. This error occurs when a partition table violates the foregoing rule. It can also occur if you have more than one active partition. Since any modifications PartitionMagic makes may decrease the amount of data that is recoverable from the hard disk, PartitionMagic does not recognize any of the hard disk’s partitions. If you must create new, error-free partition tables to resolve your problem, see “Resolving Partition Table Errors” on page 125 for instructions.

#104 No sectors in partition

No partition should contain zero sectors. Delete the partition before using PartitionMagic.

#105 Partition starts on wrong boundary

The hard-disk partition table contains erroneous values. PartitionMagic expects partitions to begin and end on the correct cylinder boundaries. If they do not, the disk may be partially corrupted. In this circumstance, if PartitionMagic were to make any modifications it might cause the loss of data. Therefore, PartitionMagic refuses to recognize any of the hard disk’s partitions. To resolve this problem, see the instructions in “Resolving Partition Table Errors” on page 125.

#106 Partition doesn’t start with sector one

See error #105.

#107 Partition begins after end of disk

This error can occur if a partition erroneously extends beyond the physical end of the hard disk. This may happen if the hard disk has been used on a different computer or with a different hard-disk controller or if BIOS settings have been changed. Be advised that the physical geometry of the hard disk may differ from the logical geometry assigned to the hard disk by the operating system.

#108 Partition doesn’t end at end of cylinder

See error #105.

#109 Partition ends after end of disk

See error #107.

#110 Partition table number of sectors is inconsistent

The hard-disk partition table contains two inconsistent descriptions of the number of sectors on the hard disk. This error is serious if both DOS and another operating system use the hard disk. Because DOS uses one description and other operating systems may use the other, data loss is likely once the partition is almost full. To resolve this error, see the instructions in “Resolving Partition Table Errors” on page 125.

#111 Logical partition starts outside of Extended

An extended partition boot record (EPBR) is a sector on the hard disk that contains a partition table. The EPBR partition table is special because it generally only has two valid entries: one for the logical partition and one that is a pointer to the next EPBR. The standard is for the logical partition's entry to be the first entry in the table and the second entry is the pointer to the next EPBR. The third and fourth entries are not used. For some utilities, such as IBM's Boot Manager, the order of these entries is important because the utility expects the first entry to be the logical and the second entry to be the pointer to the next EPBR. If PartitionMagic detects that the EPBR entries are out of order, you will be prompted to fix the error. If you choose to fix the error, PartitionMagic will reorder the EPBR entries for you automatically.

#112 Logical partition ends outside Extended

See error #111.

#113 Partitions overlap

The hard-disk partition table contains erroneous values. If data partitions overlap, writing to one may destroy data in another.

This error is sometimes the result of an OS/2 FDISK bug. If free space exists within the extended partition, OS/2’s FDISK program allows a primary partition to be created that overlaps the extended partition. A logical partition is subsequently created in the space occupied by the overlapping primary partition.

If a primary partition overlaps the end of the extended partition but does not overlap any logical partitions within the extended partition, the problem can be remedied by patching the partition table. **Only qualified individuals should attempt this repair! An incorrect patch could destroy all data on the hard disk!** In most instances, you should resolve the problem as explained in “Resolving Partition Table Errors” on page 125.

#116 Partition table Begin and Start inconsistent

The hard-disk partition table contains two inconsistent descriptions of the partition's starting sector. This error can occur if the operating system reports a hard-disk geometry that is different than the geometry in use when the partition table was written. Possible causes include: (1) different operating systems (for example, DOS and OS/2) report different hard-disk geometries, (2) you boot from a diskette that loads a different driver than is loaded when you boot from the hard disk, (3) upgrading the operating system (for example, from OS/2 2.x to OS/2 Warp) causes a different driver to be used, (4) the hard disk or controller has been changed, (5) the BIOS has been upgraded, (6) the BIOS LBA setting has been changed, or (7) there is a partition table virus present on the hard disk.

In most instances, you should resolve the problem as explained in "Resolving Partition Table Errors" on page 125. You can also use a virus scanning program to remove any partition table virus. Data loss is possible if the number of heads or sectors per track has changed since you first created your partitions.

#117 Partition's drive letter cannot be identified

Under OS/2, PartitionMagic must be able to find the drive letter for each partition before modifications can be made. There are various reasons why OS/2 might not be able to find a drive letter for each partition. For example, a driver on your system may change the drive letters from their defaults, or your partitions may not have serial numbers.

You may also see this error when running PartitionMagic under Windows.

The solution is to run PartitionMagic from DOS or from MS-DOS mode (in Windows 95 or Windows 98). When PartitionMagic runs from DOS or from MS-DOS mode, it does not need to be able to find the drive letter for each partition. Thus, if the problem indicated by this error message is the only problem, PartitionMagic can run successfully.

#120 The logical drive chain is incompatible

This error occurs under some operating systems when logical partitions are not chained together in the expected order. DOS, OS/2, Windows 95, Windows 98, and Windows NT require that logical partitions be chained together in ascending order. Some other operating systems do not require this. For example, some versions of the Linux FDISK utility chain logical partitions together in the order they are created. This error message identifies a very dangerous situation; using the DOS FDISK in this situation can cause loss of one or more partitions.

For solutions to this problem, see the instructions in "Resolving Partition Table Errors" on page 125. If you decide to back up your data and recreate your partitions, you may have to use the same partitioning program that you used to create the partitions in order to delete them. PowerQuest recommends recreating the partitions with DOS FDISK or PartitionMagic.

#121 The first sector of the drive cannot be read

The first sector of the hard disk (cylinder 0, head 0, sector 1) contains the master boot record (MBR) and the primary partition table. PartitionMagic cannot make changes to this hard disk because an error occurred when it read the first sector. See error #50 for information on resolving this error.

#122 A bad sector was found in the current or new partition area

The partition cannot be moved safely because there is a bad sector in the new or current partition area. When you see this error message, the move operation is aborted before any corruption can occur. Try moving the partition to a different place. Run ScanDisk or CHKDSK /F with a surface scan before continuing. If your hard disk has bad sectors, we recommend that you replace the hard disk.

#140 Overlapping partitions found. No partitions can be undeleted.

Two or more deleted file systems were found in the unallocated space. However, each file system claims space that another file system also claims. There are no other partitions that can be undeleted.

Networking Errors (200-299)

#202 Socket read failed
#203 Socket write failed

Socket read or write was unable to read or write the requested amount of data. Be sure the network connection is working properly. If this error occurs during an operation, the destination partition and partition table may be corrupted. If this happens, you must delete the affected partition, repair the partition table, and redo the operation.

#215 The connection was aborted due to timeout or other failure

The established connection was locally aborted. Be sure that the network connection is working properly. If this error occurs during an operation, the destination partition and partition table may be corrupted. If this happens, you must delete the affected partition, repair the partition table, and redo the operation.

#217 Attempt to connect timed out without establishing a connection

The network connection timed out. Be sure that the network connection is working properly. If this error occurs during an operation, the destination partition and partition table may be corrupted. If this happens, you must delete the affected partition, repair the partition table, and redo the operation.

#218 The attempt to connect was forcibly rejected

The network connection was refused. No connection could be made because the target machine actively refused it. This error occurs when you attempt to connect to a remote machine from PartitionMagic but there is already another server connected to it. You must wait until the other server has disconnected from the remote machine.

#220 The Link Support Layer (LSL) driver and supporting NIC driver are not loaded.

Ensure that the LSL driver and appropriate NIC driver are on the Remote Agent boot disk and are being loaded before you run Remote Agent.

#221 The connection was reset by peer executing a hard or abortive close

The connection was forcibly closed by the remote host. This error generally indicates that the peer application on the remote host was suddenly stopped or the host was rebooted. This error may also result if a connection is broken due to keep-alive activity detecting a failure while one or more operations are in progress. Operations that were in progress fail. If this error occurs during an operation, the destination partition and partition table may be corrupted. If this happens, you must delete the affected partition, repair the partition table, and redo the operation.

#223 No buffers declared for Link Support Layer (LSL) driver in NET.CFG.

No buffers have been declared for the Link Support Layer (LSL) driver in NET.CFG on the Remote Agent boot disk. Edit the NET.CFG file to ensure that the link support section has buffers declared.

#224 Buffer size for Link Support Layer (LSL) driver in NET.CFG is too small

The buffer size for the Link Support Layer (LSL) driver in NET.CFG on the Remote Agent boot disk is too small. Edit the NET.CFG file, and ensure that the link support buffer size is at least 1600.

#225 The Link Support Layer (LSL) driver does not support ETHERNET_II frames

In NET.CFG on the Remote Agent boot disk, the Link Support Layer (LSL) driver does not contain a setting for ETHERNET_II frames. Remote Agent requires Ethernet_II frame support. For proper operation, edit the NET.CFG file on the Remote Agent boot disk, and ensure that the link driver section specifies the Ethernet_II frame type.

Check Errors (500–599)

Check errors occur when PartitionMagic checks the integrity of a partition. For general information about resolving these errors, see "Resolving Check Errors" on page 125.

#500 Subdirectory is corrupted

This error message reveals the name of the corrupted subdirectory. Back up the contents of that directory and its subdirectories. You can then delete the corrupted subdirectory.

#501 Cross-linked files were found

Multiple files claim the same clusters. PartitionMagic can fix this error when it occurs on an NTFS partition. For more information, see "Checking Partitions for Errors" on page 49. PartitionMagic lets you fix this error by: (1) copying the shared clusters to each affected file, (2) deleting all affected files, or (3) keeping one file and deleting the other affected files.

#506 Not enough free space on partition to shrink

Some free space (which is dependent on the hard disk's current contents) is required to resize a partition smaller. Delete unneeded and duplicate files in the partition and then attempt the operation again.

#508 As specified, the operation does not change the partition

You have entered a value that is the same as or (when rounded to the required cylinder boundary) rounds to the same as the partition's present value. Enter a larger change.

#509 A bad sector was detected in the current or new FS area

In order to perform the resize operation that you requested, PartitionMagic attempted to expand the file system area. However, the program found a bad sector in the new area. Try moving the partition before you resize it. No corruption occurs when you encounter this error.

#510 The version of the file system is not supported

An updated version of PartitionMagic is required to operate on this new version of the file system. Visit *www.powerquest.com* for information about updated versions of PartitionMagic.

Batch Errors (600–633)

#600 Batch file could not be opened
#601 Error trying to write batch file
#602 Batch file not found

PartitionMagic lets you specify a series of changes you want to make to your partitions, and then executes all the changes when you click **Apply**. At this point, PartitionMagic writes out a command list file (called a "batch file") to disk in preparation for execution, and then reads the file upon execution (immediately if a lock can be secured on all impacted partitions, or in a special "reboot" mode after rebooting your computer if not all locks can be secured). In the Windows 95, Windows 98, and Windows NT Workstation versions of PartitionMagic, the batch file is located in your Windows\System directory. In the DOS versions, it is located in the directory from which PartitionMagic is running. The batch filename is PQ_SM40.PQB.

If the batch file cannot be created, cannot be written, or cannot be located when PartitionMagic attempts to execute the command file, the above error messages appear. If you are running PartitionMagic from rescue disks, ensure they are not write-protected. If you cannot determine the source of the problem, contact PowerQuest technical support.

#603 Unknown batch operation

The batch file contained an operation unknown to PartitionMagic. Contact PowerQuest technical support.

#625 Batch structure has changed

Generally error 625 only occurs when the system needs to go into boot-mode to execute your commands. A 625 error occurs when your disk geometry is seen differently in your native Windows version of PartitionMagic than it is in the boot-mode version. For security reasons, PartitionMagic cannot apply your changes without risking data loss.

One common configuration that will cause a 625 error is a system that has a hard disk (such as a SCSI or removable drive) that is visible in Windows but that cannot be seen in the boot-mode environment.

Some possible solutions include:

- Make sure the operation executes in native Windows mode (without resorting to boot-mode execution). PartitionMagic will only go into boot-mode if it cannot lock a partition (that is, if there are any open files on the partition). Try to confine all operations to drives PartitionMagic can lock before clicking the **Apply Changes** button.
- Change the configuration of the offending disk (most likely the SCSI or removable drive) by changing the BIOS setup for that disk. Doing so will ensure that the native and boot-mode environments detect identical hard disk configurations. If this does not work, you can try temporarily disabling the offending disk.

This error usually indicates that some other application has modified your disk configuration while you were running PartitionMagic. Make sure no other applications are loaded while PartitionMagic is running.

User Interaction Errors (950–999)

#950 Unable to detect any disk drives

No partitionable hard disks were found on your computer. Diskette drives and many removable media drives do not support partitioning. PartitionMagic cannot perform operations on disks in such drives.

#951 An invalid value was entered

The value entered is outside the range or (when rounded to the required cylinder boundary) rounds to a value that is outside the range for the operation specified. Check the displayed range and reenter the value.

#952 Value entered is the same as the current value

See error #508.

#963 Selected operation is currently invalid

Not all PartitionMagic operations can be performed on all partitions. For example, you cannot convert an HPFS partition to NTFS, and you cannot create a partition if there is not enough unallocated space on the hard disk.

Under Windows, options that are not available either do not appear on the menus or they appear dimmed. However, if you are running scripts with the DOS version, there are no menus so you cannot see which operations are available. Refer to the relevant information in this user guide or the online Help for restrictions that explain why an operation is not available.

#967 Could not perform operation to the value specified

This error occurs only when you run PartitionMagic Pro from a script. If the value specified on a resize or move operation is not between the minimum and maximum possible, script execution stops and this error displays.

#968 Incorrect Volume Label entered, Deletion not performed

To delete a partition, PartitionMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you want to delete, this error appears.

#969 Incorrect Volume Label entered, Unable to proceed.

To format an existing partition, PartitionMagic requires you to enter that partition's volume label. If the volume label you enter does not match the volume label of the partition you are attempting to format, this error appears.

#970 Invalid Bad Sector Check value specified

This error occurs only in the enterprise version of PartitionMagic from a running script. If the script command SET DEFAULT BAD SECTOR TEST STATE is not followed by either ON or OFF, this error appears.

#971 The label entered was too long

When you enter a volume label, the process that checks the validity of the label displays this message if the label is too long. The label must be no longer than 11 characters.

#972 Invalid characters in the label

When you enter a volume label, the process that checks the validity of the label displays this message if the label has characters that are invalid. Invalid characters include the following: [* ? : < > | + = ; \ / " ,].

#973 Volume Label cannot have leading spaces

When you enter a volume label, the process that checks the validity of the label displays this message if you enter a label in which a space or spaces are the leading characters.

#974 Root size specified was not in the valid range

This error occurs only in the enterprise version of PartitionMagic from a running script. If you use the Create, Format, or Resize Root operations, and the number of root entries specified is not within the acceptable range for that partition, this error appears. Generally, the valid range is from 64 to 1,024.

#975 The cluster size specified was invalid for this partition

This error message displays only in the enterprise version of PartitionMagic from a running script. Many commands have a cluster size option. If a script command specifies an invalid cluster size (for the type and size of the partition), this error appears.

#976 Cannot create the file system specified in the current space

This error message displays only in the enterprise version from a running script. When you use the Create or Format commands, you must also choose a file system type. If the file system or partition type you specified cannot be created in the space available, this error appears.

#977 Partition selected is invalid

This error message displays only in the enterprise version of PartitionMagic from a running script. If the partition selected from the Select Partition command is not a valid partition, this error appears.

#978 Unable to set to proper partition after last operation. Script halted.

This error message appears only in the enterprise version of PartitionMagic from a running script. After each operation, PartitionMagic ensures that the right partition is still selected. If PartitionMagic is not able to select the proper partition, it ends script processing and displays this error.

#986 Unable to get information for the specified partition

PartitionMagic reports this error most commonly when MS-DOS-based terminate-and-stay-resident programs (TSRs) are running in the background. These TSRs will be located in the Config.sys or Autoexec.bat files.

One such TSR is the SUBST command. The SUBST can be used to associate a path with a drive letter. This creates a “virtual drive” that can be accessed as an additional local drive. The SUBST command is classified as a “dirty” or “deadly” TSR, and cannot be loading at the same time that PartitionMagic is loading.

To solve the problem, you must remark out the Config.sys or Autoexec.bat line that is loading the SUBST command. This command can be reinstated after running PartitionMagic.

There are other “dirty” or “deadly” TSRs that may cause a problem. If you are experiencing this error and are not using the SUBST command, find and remark out any of the following commands: Join, Append, or Assign.

This error can also be reported if your C: drive is compressed. If the C: drive is compressed, you will need to either uncompress the drive, or run PartitionMagic from the rescue diskettes.

This error can also be caused by multiple partition table errors. If any of the above solutions do not apply, run PartitionInfo and send the report to PowerQuest technical support. Refer to "Generating Diagnostic Reports with PartitionInfo" on page 126 for information about PartitionInfo and PARTINFO.

#993 Partition contains open files. Use the operating system check utility.

To fix this error, disable any anti-virus programs on your system and run a thorough ScanDisk from DOS.

NTFS Check Errors (1500–1699)

Errors 1500–1699 are NTFS-specific check errors, which can occur when PartitionMagic checks the integrity of a partition. PartitionMagic can fix certain errors when you perform the Check for Errors operation. For more information, see "Checking Partitions for Errors" on page 49 and "Resolving Check Errors" on page 125.

In this section, "attribute" does not mean read-only, hidden, system, etc. Rather, "attribute" means one of a file's data streams.

#1501 Wrong version of NTFS

The partition was created using a version of the NTFS file format that PartitionMagic cannot work with.

#1503 Bad NTFS cluster size

The NTFS cluster size must be 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, or 65,536 bytes.

#1512 Restart record mismatch

The two restart entries in the journal file are different. This may happen if Windows NT Workstation is not properly shut down. To fix this problem, restart Windows NT Workstation and shut it down using the Shut Down command.

#1513 Bad attribute position in file record

This occurs only in versions of PowerQuest products released prior to 2001. You can usually resolve this issue by running CHKDSK /F on the affected disk.

#1516 Partition improperly dismounted

The partition dirty flag is set in a restart record in the journal file. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing the partition. Reboot Windows NT and execute CHKDSK /F to repair the damage.

#1527 Bad update sequence number

A buffer contains mismatched update sequence numbers. This error may have been caused by a power failure or system crash while the Windows NT operating system was writing to the partition. Reboot Windows NT Workstation and execute CHKDSK /F to repair the damage.

#1529 Information mismatch in directory entry

A file attribute stored in a file record is different from the attribute stored in its directory entry. If this error is in a system file (file 0–10), Windows NT CHKDSK does not fix it, but Windows NT rebuilds the root directory on the partition the next time the operating system is started.

#1538 Can't find contiguous space to move

The partition does not contain enough contiguous free space to hold the new copy of a file that must be contiguous. You normally encounter this error when you use the Resize option to resize a partition smaller.

#1539 File size mismatch

The size of a system file (file 0–15) recorded in its file record does not match either the size recorded in its directory entry in the root directory or the size of its data stream.

#1544 External attribute list in external attribute

An external file record has an external attribute list.

#1545 File attributes out of order

The attributes in a file must appear in order of increasing numeric type.

#1546 Attribute neither resident nor nonresident

The attribute resident flag has a value other than resident or nonresident.

#1547 Wrong run limits

A run has more clusters than the difference between its highest and lowest cluster.

#1548 File table has fewer than 16 entries

The file table must have at least 16 entries.

#1549 File table has more than 4 billion entries

The file table must have fewer than 4 billion entries.

#1604 File's parent does not contain the file

The file's parent directory does not contain a reference to the file, or a file's size, date, or time information does not match the file's parent directory information. This error can be fixed when you perform the Check operation. For more information, see "Checking Partitions for Errors" on page 49. When you fix this error, PartitionMagic updates the file's parent directory information.

#1609 Lost cluster(s)

The volume bitmap shows clusters as being used which are not used (no file claims them). This error can be fixed when you perform the Check operation. For more information, see "Checking Partitions for Errors" on page 49. PartitionMagic lets you fix this error by either deleting the lost clusters or by saving them in a file in the root directory. The filename is FILEXXXX.PQE, where XXXX is a number between 0000 and 9999.

#1630 Inconsistent sizes in attribute header

File size information is incorrect. This error can be fixed when you perform the Check operation. For more information, see "Checking Partitions for Errors" on page 49. When you fix this error, PartitionMagic computes the correct file size information.

#1644 Bad system file sequence number

A system file has a bad sequence number. System files must have a sequence number from 1 to 15. A partition with this problem may pass Windows NT CHKDSK, but Windows NT does not mount the partition the next time the operating system is started.

#1647 Error in root directory index

There is an error in the root directory's index. Running Windows NT CHKDSK does not fix this problem, but Windows NT automatically rebuilds the root directory on the partition the next time it is started.

#1681 Data is compressed or sparse

The NTFS file system cannot be converted to FAT or FAT32 because a file has been compressed. The conversion cannot run unless all files are decompressed. (The FRS number for the compressed file is shown.)

#1687 An object index is present

A file with an object index created by Windows 2000 was found. For example, users may have been assigned disk space quotas. When converting a partition to FAT or FAT32, this information will not be saved, since FAT and FAT32 file systems do not support object indexes. (The FRS number for the compressed file found is shown.)

FAT Check Errors (2000–2099)

Check errors occur when PartitionMagic checks the integrity of a partition. For general information about resolving these errors, see "Resolving Check Errors" on page 125.

#2001 FAT copies are not identical

Run ScanDisk to fix this error.

This problem may also be caused by a virus. Run a virus checker and remove the virus if possible.

#2002 There are invalid entries in the FAT

This error can generally be fixed by running a thorough ScanDisk on the partitions reporting the error.

#2003 File size does not match FAT allocation for file

Run ScanDisk or CHKDSK to fix this error.

#2005 One or more lost clusters are present

Run ScanDisk or CHKDSK to fix this error.

#2012 Formatted FAT file system too big for partition

This error can occur when:

- The number of sectors in the partition is larger than 65,536, and the bsHugeSects field of the boot sector ("Big total number of sectors" in Norton's DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.

- The number of sectors in the partition is less than 65,536, and the bsSects field of the boot sector ("Total sectors on disk" in Norton's DISKEDIT utility) shows that there are more sectors in the partition than the partition table shows.

This situation can result in data loss when the FAT file system tries to use space outside the partition that does not exist or that belongs to another partition. Since file data may exist outside the partition boundary, you cannot fix the problem by simply patching the boot sector.

To correct the error, back up all data on the partition, delete the partition, recreate the partition, and restore the data. Alternately, it has been reported that you can use Norton Disk Doctor to fix this problem.

#2013 A component of FAT geometry is bad

This error can occur when:

- The number of clusters on the hard disk is greater than the FAT limits allow. This can result from bad values in the boot sector for the number of sectors, FATs, root entries, reserved sectors, and sectors per cluster.
- The number of sectors in the FAT is not large enough to hold the number of clusters present on the hard disk.

A qualified consultant may be able to fix the hard disk by performing simple patches. Alternately, you can back up the data on the partition, delete the partition, recreate the partition, and restore the files.

#2024 The OS/2 Extended Attribute file is corrupt

This error only occurs if you are running OS/2 and a program mistakenly writes to or overwrites the OS/2 Extended Attribute file. If this error occurs, you should back up your data, delete the partition, recreate the partition, and restore your data.

#2027 Too many root entries in the FAT32 partition to convert it to FAT16

Long filenames may be causing this problem, since they use multiple entries per file. To fix this error, move some of the root directory entries into a subdirectory and defragment the disk.

#4002 No valid NetWare volumes signature in volume definition table

See error #3.

BootMagic Errors (8000-8999)

These errors are “first head” errors. They can be resolved with assistance from PowerQuest technical support. Before calling technical support, please type the following at a DOS prompt: `wrprog /bak >x:head1.dat`, where *`x:`* is one of the drives on your machine.

The wrprog.exe file can be found in the Utility\DOS folder under your PowerQuest product folder. If you are running under Windows NT and do not have DOS available, you can use the DOS rescue diskettes you created for your PowerQuest software.

Operating System Errors (over 10,000)

Any number over 10,000 indicates an operating system error. To determine the number of the operating system error, subtract 10,000. (For example, 10,032 - 10,000 = 32) Consult your operating system documentation for information about resolving the error.

APPENDIX C

PowerQuest Technical Support

This appendix includes the following information:

- Before Contacting Technical Support
- Term of Technical Support
- Contact Information

Before Contacting Technical Support

Before contacting PowerQuest, please try to resolve problems you encounter by using the online Help, the user guide, the READMEPM file, and PowerQuest's corporate web site.

Tips

- Your problem may be resolved by applying the most recent patch or upgrade of the software. Go to *www.powerquest.com/updates* to download the latest software.
- PowerQuest technical support engineers may request information from the PartitionInfo utility program to help you resolve problems with PartitionMagic. See "Generating Diagnostic Reports with PartitionInfo" on page 126 for more information about PartitionInfo and PARTINFO. The PartitionInfo report is always required for errors 100-199, 986, and drive detection errors of any kind.
- Your product serial number is required to obtain technical support.
- If you received a demo or trial version of the product, you are not entitled to complimentary technical support.

Term of Technical Support

Technical support is available to all registered users throughout the life of the product, which began when PowerQuest released the software to manufacturing and ends six months after the release of the next version of the software or when PowerQuest discontinues its development.

PartitionMagic: Upon registration, PowerQuest provides 30 days of complimentary technical support from the day of your first contact.

PartitionMagic Pro: PowerQuest provides fee-based support for PartitionMagic Pro. Refer to *www.powerquest.com/support* for details about fee-based support.

Contact Information

Corporate Web Site

The Technical support web site, *support.powerquest.com*, includes an overview of support options, an e-mail support request form, a list of error messages and information to resolve problems you encounter, and answers to frequently asked questions about the product.

E-mail

Language	E-mail Address
English	support@powerquest.com* eurots@powerquest.com
French	france@powerquest.com
German	germany@powerquest.com
Italian	italian@powerquest.com

*To obtain e-mail technical support for specific technical questions, you should fill out the form at *www.powerquest.com/support/emsupport.cfm* (available in English only).

Fax

Location	Number
U.S.A.	(801) 437-4218
Europe	+31 (0)20 581 9270

Fax a description of your problem to the technical support fax number. This service is available in the U.S., Canada, and Europe 24 hours a day, 7 days a week. PowerQuest technicians try to respond to all fax requests within 24 hours.

Telephone

Language	Location	Number
English	Netherlands	+31 (0)20 581 3906
English	UK	+44 (0)20 7341 5517
English	U.S.A.	(801) 226-6834
French	France	+33 (0)1 69 32 49 30
German	Germany	+49 (0)69 66 568 516
Italian	Italy	+39 (0)2 45 28 1312

The U.S.A. call center is open Monday through Friday from 7:00 a.m. to 6:00 p.m., MST/MDT. Our European call center, located in the Netherlands, is open Monday through Friday from 9:00 to 18:00, CET.

Postal Service Mail

U.S.A.	Europe
PowerQuest Corporation P.O. Box 1911 Orem, Utah 84059-1911 U.S.A.	PowerQuest Customer Service P.O. Box 58287 1040 HG Amsterdam, Netherlands

Include a detailed description of your problem and a return address, a daytime phone number, or other relevant contact information.

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